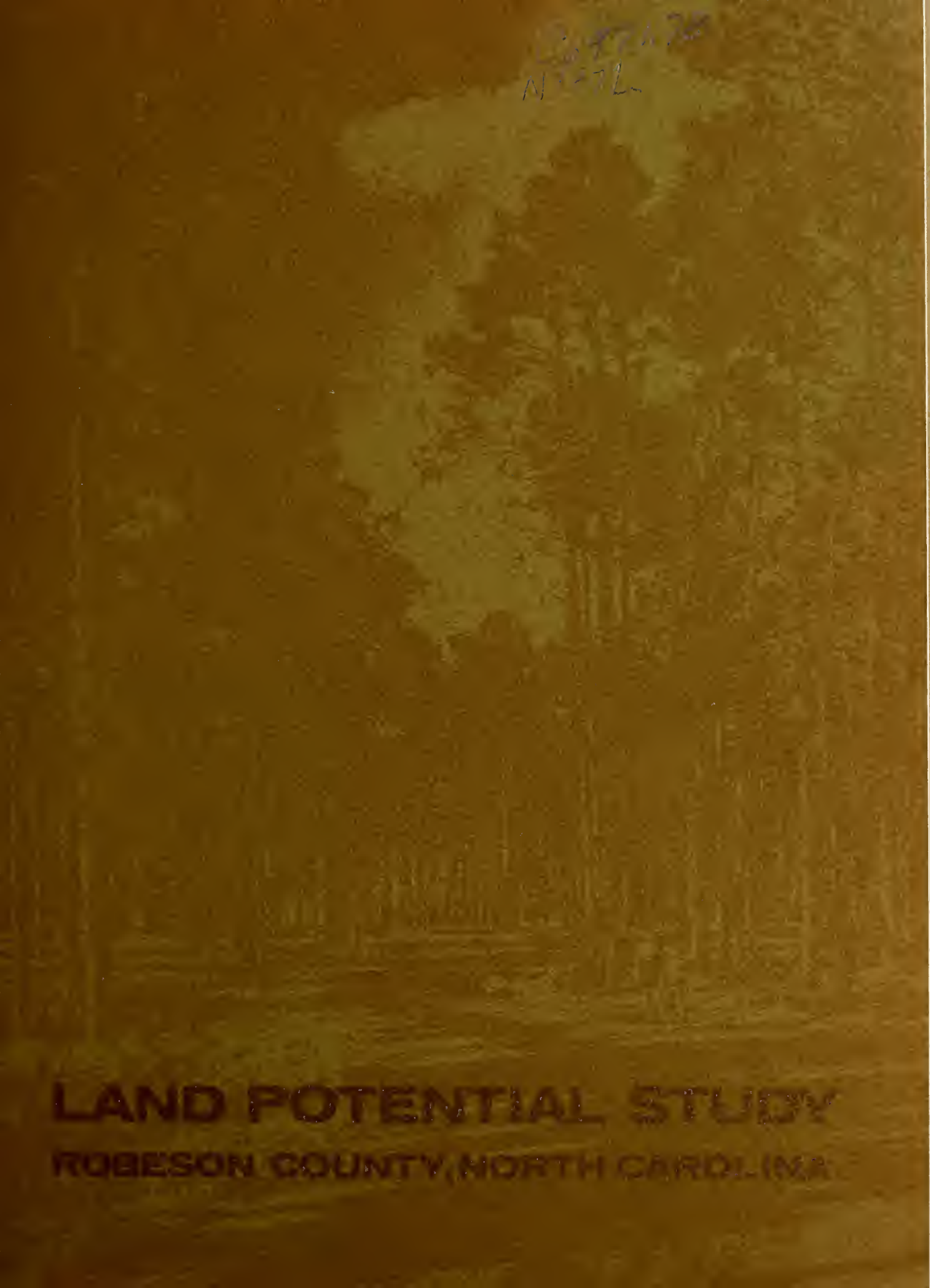
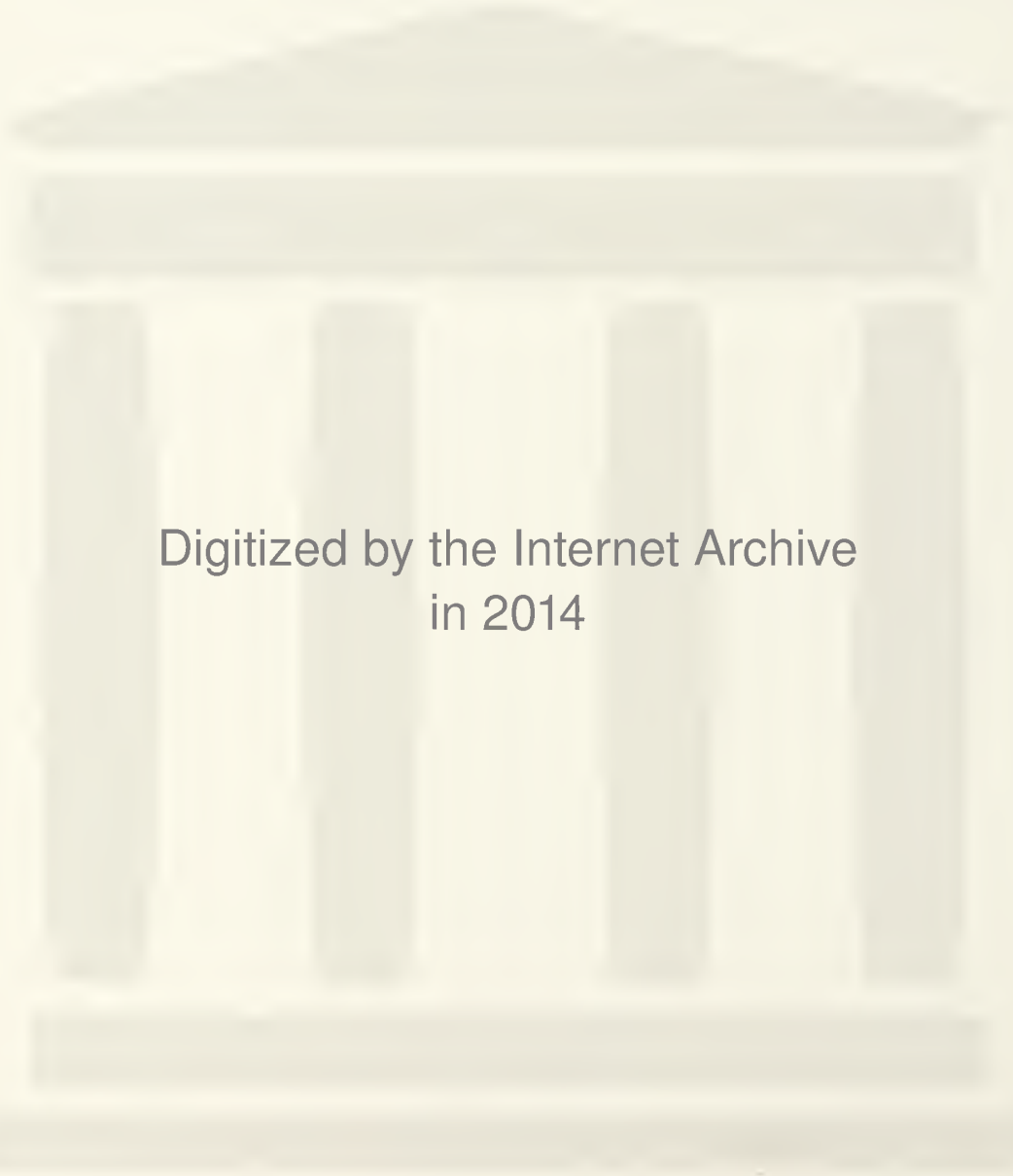


LAND POTENTIAL STUDY

ROBESON COUNTY, NORTH CAROLINA

TITLE:	Land Potential Study, Robeson County, North Carolina
AUTHOR:	N. C. Department of Conservation and Development, Division of Community Planning
SUBJECT:	Planning Area Characteristics Natural and Manmade Features Land Use Potentials
DATE:	May, 1969
LOCAL PLANNING AGENCY:	North Carolina Division of Community Planning
SOURCE OF COPIES:	Robeson County, North Carolina County Courthouse, Lumberton, N. C. Department of Conservation and Development Division of Community Planning P. O. Box 2719 Raleigh, N. C. 27602 Clearinghouse for Federal Scientific and Technical Information, Washington, D. C.
HUD PROJECT NUMBER:	NCP-69
SERIES NO.:	n.a.
NUMBER OF PAGES:	66
ABSTRACT:	Existing land uses and reasons for their development are described in an attempt to identify potential land development areas. Basically, natural and manmade features have influenced the land use pattern in Robeson County. Therefore, these features were identified and inventoried. Examples of natural features include climate, topography, soils, geology, minerals, drainage, water resources, and factors limiting development. Examples of man-made features include utilities, transportation, and major community facilities. After having analyzed these features in relation to existing land uses, potential land development areas were identified. These potential development areas will serve as the basis for another study, the Robeson County Land Development Plan, which will be published after the Land Potential Study.



LAND POTENTIAL STUDY

ROBESON COUNTY, NORTH CAROLINA

The preparation of this report was financed in part through an urban planning grant from the Department of Housing and Urban Development, under the provision of Section 701 of the Housing Act of 1954, as amended.

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MAY, 1969

PRICE $2.00

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INTRODUCTION

Robeson County, a rural county since its founding in 1787, is growing at a rate unanticipated a few years ago. The County Commissioners are enthused about this growth but realize it is occurring haphazardly and straining governmental services. Therefore, to realistically appraise the county's growth problems and potentials, the County Commissioners appointed a County Planning Board.

The twelve member Robeson County Planning Board is also the County Agricultural and Industrial Development Commission. The Planning Board has no legislative powers. Its function is to prepare studies, make plans, and present recommendations to the County Board of Commissioners.

The Planning Board's first action was making application to the Division of Community Planning, North Carolina Department of Conservation and Development, for planning assistance. With technical assistance provided by the Division of Community Planning, the Planning Board will prepare a series of studies enabling them to guide county development. The studies to be completed in the two year contract are:

Land Potential Study
Community Facilities Plan
Sketch Thoroughfare Plan
Land Development Plan
Zoning Ordinance

PURPOSE AND ORGANIZATION

The Land Potential Study is the first study to be prepared by the Planning Board. In this study, natural and manmade features which have influenced and will continue to influence land uses will be identified, inventoried, and analyzed. From this study an insight will be gained into the county's development potentials.

The Land Potential Study is organized into the following chapters:

Chapter I. County Background
Chapter II. Natural Features
Chapter III. Manmade Features
Chapter IV. Land Use Potential

1

COUNTY BACKGROUND

REGIONAL SETTING

Robeson County, the second largest county in North Carolina, is located along the South Carolina state line in the southern section of the North Carolina Coastal Plain Region (see Map 1). The county's 944 square mile area is bounded by six counties - Hoke and Cumberland on the north, Bladen on the east, Columbus and Dillon on the south, and Scotland on the west. All these counties, with the exception of Dillon County, lie in North Carolina.

Lumberton, the largest urban area, is the county seat. It is located near the county's geographic center and within convenient driving distance of larger urban areas. By automobile, Lumberton is approximately 33 miles south of Fayetteville, 92 miles south of Raleigh, 125 miles southeast of Greensboro, 130 miles east of Charlotte, and 73 miles northwest of Wilmington.

An excellent system of roads, including Interstate (I), United States (U. S.), and North Carolina (N. C.) highways traverse the county. I-95 handles most of the north-south traffic. This route is one of the major highways connecting the highly urbanized Northeastern United States and the Southern states. U. S. 301, another major north-south highway passes through the county. U. S. 74 is the major east-west highway traversing the county. It passes through Lumberton and connects Robeson County with Wilmington to the east and Charlotte to the west.

N. C. 41, a major state highway, extends north-south through the county. It begins at N. C. 58 just west of Trenton near New Bern, enters the county east of Lumberton, passes Lumberton and Fairmont, and extends into South Carolina. Another major east-west highway, N. C. 211, extends from Southport on the east coast, through Lumberton and Red Springs, to its terminus west of the Southern Pines resort area.

The following highways link Robeson County with its region but they are not major highways. U. S. 501 passes through a small portion of the southwestern corner of the county, enters

REGIONAL SETTING

N

0 5 10 20 55

MILES

MAP 1

South Carolina, and terminates at Myrtle Beach. N. C. 83, a short north-south highway, begins south of Maxton and extends into South Carolina where it terminates southeast of Bennettsville. N. C. 20 extends in an east-west direction through Saint Pauls and the northern portion of the county. It links Robeson County with Bladen and Hoke Counties. N. C. 904 begins at a point east of Rowland, parallels the South Carolina border, and terminates on the east coast. N. C. 71, N. C. 72, N. C. 130, N. C. 710, N. C. 711, the remaining state highways, link various towns within the county but do not extend into the region beyond the county.

Railroads traversing Robeson County serve the people, businesses, and industries with passenger and freight service. These services are provided mainly by the Seaboard Coast Line Railroad which extends through the center of the county in a northeast direction.

Robeson County is served by the Lumberton Municipal Airport which is located on approximately 900 acres of land one-half mile south of the I-95-N. C. 711 interchange. It has three 5,000 foot paved runways, one of which is lighted. These runways can accommodate light aircraft and small business jets. However, repair and fuel services are not available to the latter. Piedmont Airlines provides passenger service in nearby Fayetteville. Piedmont makes connections with other airlines at Charlotte and Raleigh, N. C., Atlanta, Georgia, Washington, D. C., Cincinnati, Ohio, and New York, N. Y.

HISTORY

Robeson County was settled in the eighteenth century by Scottish, English, and French immigrants. From Wilmington, their port of entry, they moved up the Cape Fear River searching for attractive agricultural and forest land. They settled in the area of Bladen County and established a subsistance agricultural

economy by exploiting the timber and raising such crops as cotton, corn, wheat, potatoes, and peas. Their combined efforts led to the formation of Robeson County in 1787 from part of Bladen County.

Lumberton, the county seat, was established in 1796. It became the market and trade center for sparsely settled communities scattered throughout the county. In addition to Lumberton, Fayetteville and Wilmington served as regional market centers. Inadequate transportation facilities between Robeson County and regional market centers made journeys difficult. For example, two days were usually required to travel to Fayetteville.

The first good transportation ties linking Lumberton to its regional markets were provided by railroads. Robeson County's first and only railroad prior to the Civil War was the Wilmington, Charlotte, and Rutherfordton Railroad (now a branch of the Seaboard Coast Line Railroad). The railroad began operating from Wilmington through Lumberton and Maxton in 1860. By 1884 the Fayetteville and Florence Railroad (now a branch of the Seaboard Coast Line Railroad) became a reality and the country's second railroad was put into service. This railroad extended through Robeson County and served Lumber Bridge, Red Springs, and Maxton. In 1892, a railroad line was opened from Fayetteville to Parkton, Pembroke, and Rowland. Today, it is the main line for the Seaboard Coast Line Railroad.

Two branch railroad lines were constructed in the 1890's. The first one extended from Lumberton to Proctorville. However, because of limited use, it was abandoned in 1935. The second branch railroad extends from the Seaboard Coast Line Railroad's main line into Fairmont and is still in operation today.

The last railroad constructed in Robeson County was the Virginia and Carolina Southern in 1908. It ran from Lumberton north to Saint Pauls and later to Hope Mills, North Carolina.

Shortly after the railroad era, adequately designed and paved roads became a key issue. The state began to consider roads and by the 1920's a roads program was formulated. Many

existing roads linking settlements to Lumberton and regional market areas were paved; by 1947 nearly every important road in the county was paved.

Another significant factor in the growth and prosperity of Robeson County was the organization of its farmers. In the early 1900's the farmers established the first Farmers Alliance Chapter, petitioned for and got one of the first County Commissioners of Agriculture, and conducted farmer institutes for better farm, home and pasture programs.

The farmers were also instrumental in introducing tobacco, a cash crop that became as important as the cotton crop. At the beginning of the 1900's nearly 50 percent of the cultivated land was utilized for cotton. However, by the beginning of World War II the cotton market suffered financial losses from which it has never recovered. Tobacco became the chief cash crop and by 1964 provided approximately one-half of all the agricultural income in the county.

EMPLOYMENT

Today, Robeson County remains predominately agricultural. (As of 1964, approximately 40 percent of all the workers were employed in agriculture). However, agricultural employment has been declining by approximately 200 jobs per year.[1] Reasons for this decline are related to the Federal farm programs and farm mechanization.

Originally, the Federal farm programs were designed to encourage farming occupations by increasing the incomes of the rural poor. However, these program have increased the wealth of the upper-income landowners while largely bypassing the rural poor. Therefore, many rural poor families have ceased farming.

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[1] Division of Community Planning, Fairmont Population and Economy. (Raleigh: North Carolina Department of Conservation and Development, 1966), p. 8.

A report of the President's National Advisory Commission on Rural Poverty, "The People Left Behind", describes the situation.

> "The distribution of benefits . . . were skewed markedly toward the upper income groups of farmers. It is clear that the price support and related programs do very little for the rural farm poor, and nothing directly for the rural nonfarm poor. Their existence, if defensible must be justified entirely on other grounds."[2]

Farm mechanization also reduces the need for agricultural workers. One machine can replace many laborers and lower production costs. Therefore, landowners, searching for ways to lower costs, have utilized machines as an economical substitute for hand labor.

Although agricultural jobs have been decreasing, manufacturing jobs are increasing. Since 1960, the construction of new plants and expansion of existing ones has created approximately 5,400 additional manufacturing jobs. These new jobs overcompensate for losses in agricultural employment, but they do not solve the county's current out-migration problem. It was estimated by the Economic Research Service that during the 1960-1967 period, 21,703 people or 19.6 percent of the total county population left Robeson County. This high out-migration rate can be attributed to low-income people seeking higher wages elsewhere. For this reason, Robeson County is losing its greatest resource, its people.

POPULATION

County

In 1960, the county's population was 89,102. This is an increase of 12,242 people when compared to the 1940 population of 76,860. Since 1940, the greatest population increase has

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[2] President's Advisory Commission on Rural Poverty, The People Left Behind. (Washington: U. S. Government Printing Office, 1967), p. 143.

occurred in the Indian race. From 1940-1960, 9,665 Indians were added to the county's population. For the same period, the white and Negro population has increased by only 1,894 and 683 persons respectively. This information is shown in Table I.

TABLE I

1940-1960 POPULATION CHANGE

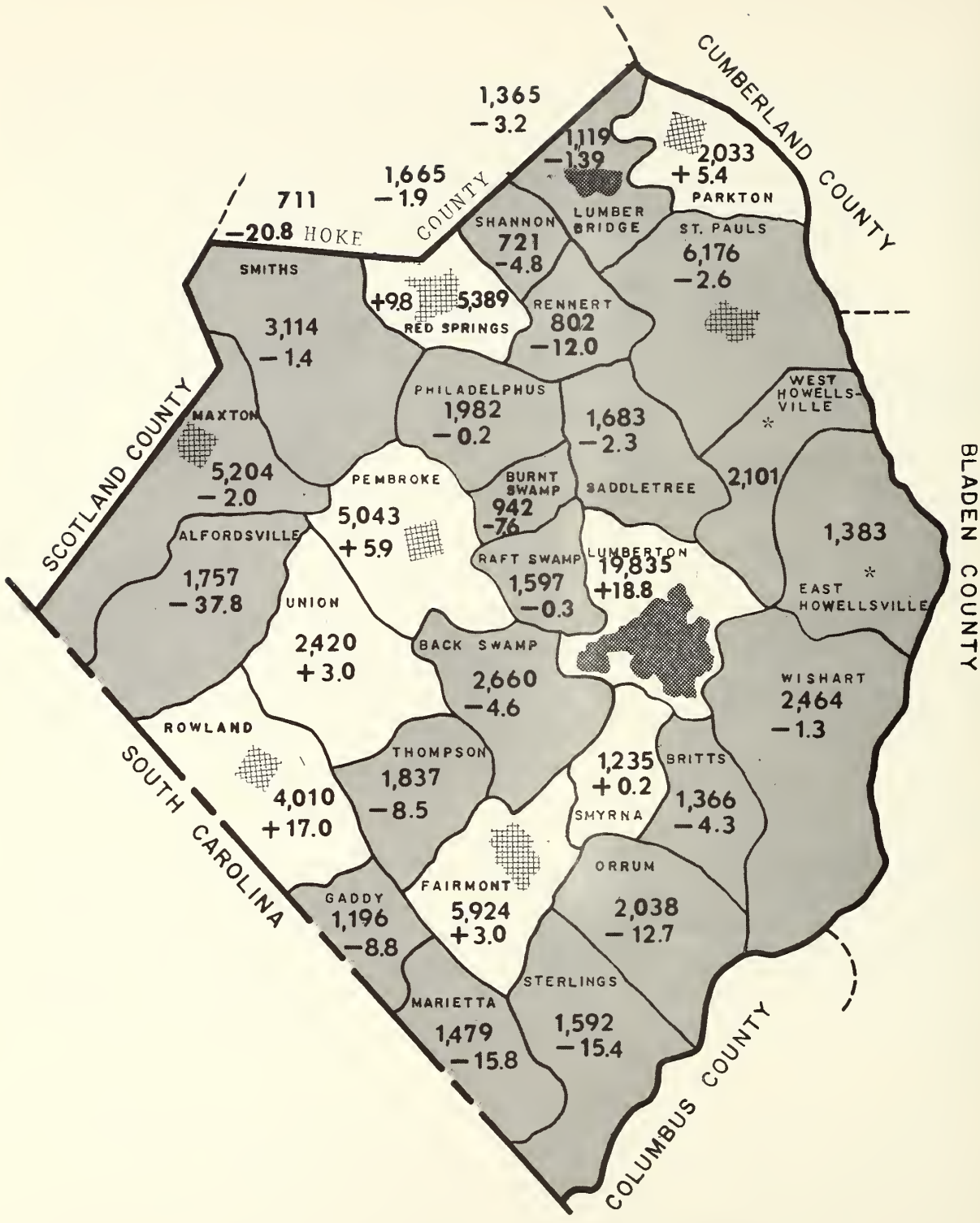
Population For	1940	1960	Change
White	34,658	36,552	+1,894
Negro	25,573	26,256	+683
Indian	16,629	26,294	+9,665
Total	76,860	89,102	

In the future, the county population will increase. Projections supplied by the N. C. Social Science Advisory Committee list Robeson County's population at 98,000 by 1980 and 110,000 for 2000.

Townships and Towns

Robeson County is divided into 29 townships and has 13 incorporated towns. The townships have predominately rural character and generally lack built-up areas. The townships and their 1960 populations are shown on Map 2. Townships with the largest populations are, in most cases, ones with small incorporated towns.

The 13 incorporated towns are scattered over the county. Lumberton, with the highest population and greatest land area, serves as the retail trade center for Robeson County. Red Springs, the only town other than Lumberton with a 1960 population greater than 2,500 people, is located near the Hoke County line. Red Springs had a 1960 population of 2,767 people. The towns and their 1960 population are as follows:



POPULATION BY TOWNSHIP, 1960

PERCENT CHANGE DURING 1950'S

- DECREASE
+ INCREASE

ROBESON COUNTY

N

0 5 10

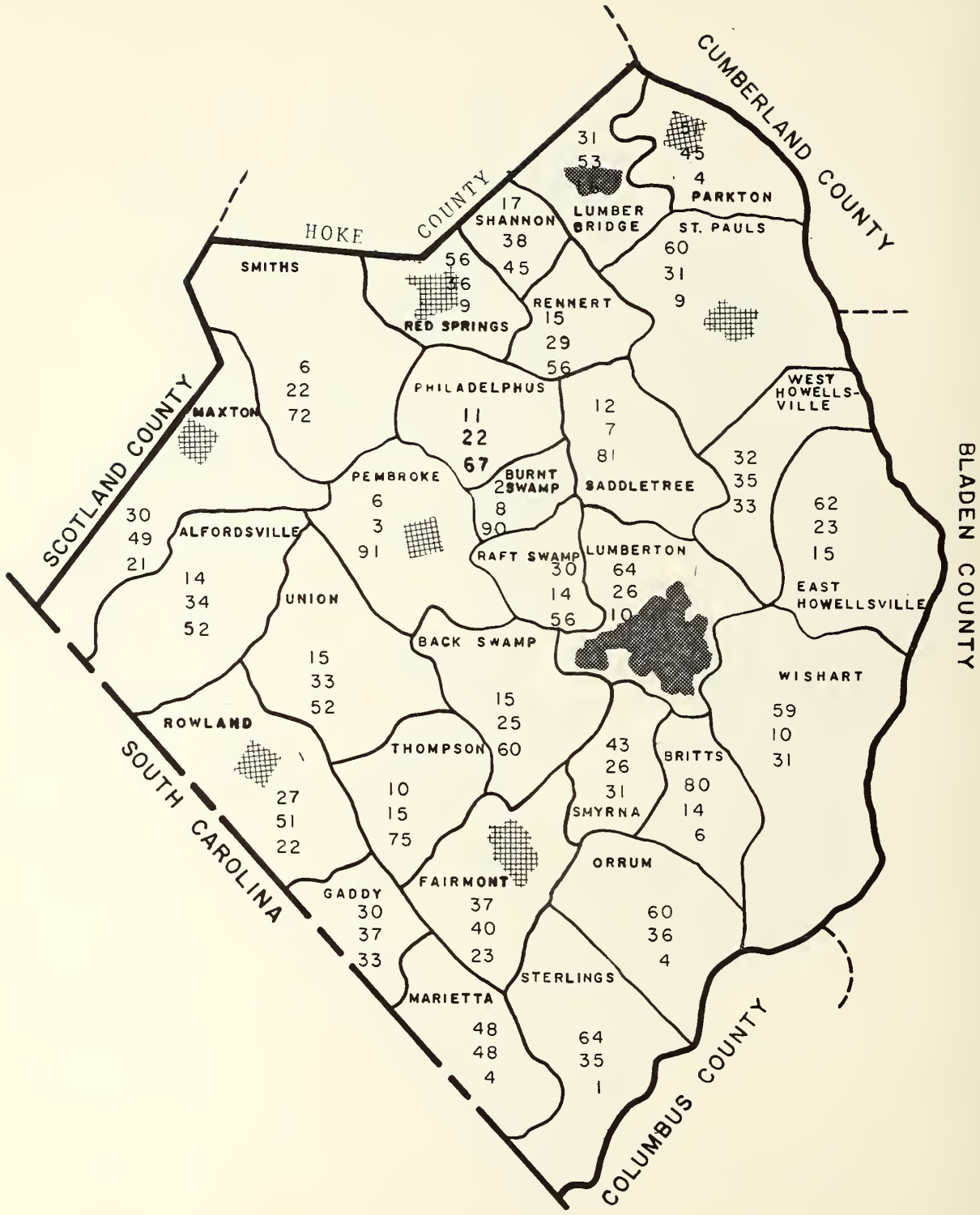
MILES

MAP 2

Lumberton - 15,305
Red Springs - 2,767
Fairmont - 2,286
Saint Pauls - 2,249
Maxton - 1,755
Rowland - 1,408
Pembroke - 1,372
Parkton - 906
Marietta - 239
Proctorville - 188
Orrum - 139
Lumber Bridge - 100
McDonald - 79

Race

The population of Robeson County is composed of three races - white, Negro, and Indian. Population concentrations of each race for 1960 are shown on Map 3. The greatest percent of the white population lives in the eastern half of the county. Most of the Negroes are concentrated in Lumber Bridge, Rowland, and some townships north of Lumberton. The Indian population is concentrated in Pembroke and nearby townships. The Indian race is unique to southeastern North Carolina and its disputed origin as members of the "Lost Colony" is described in North Carolina history books. The Indians speak English, have physical features similar to the white race, and have no folklore. They are primarily engaged in farming.



WHITE, NEGRO, AND INDIAN POPULATION BY TOWNSHIP 1960

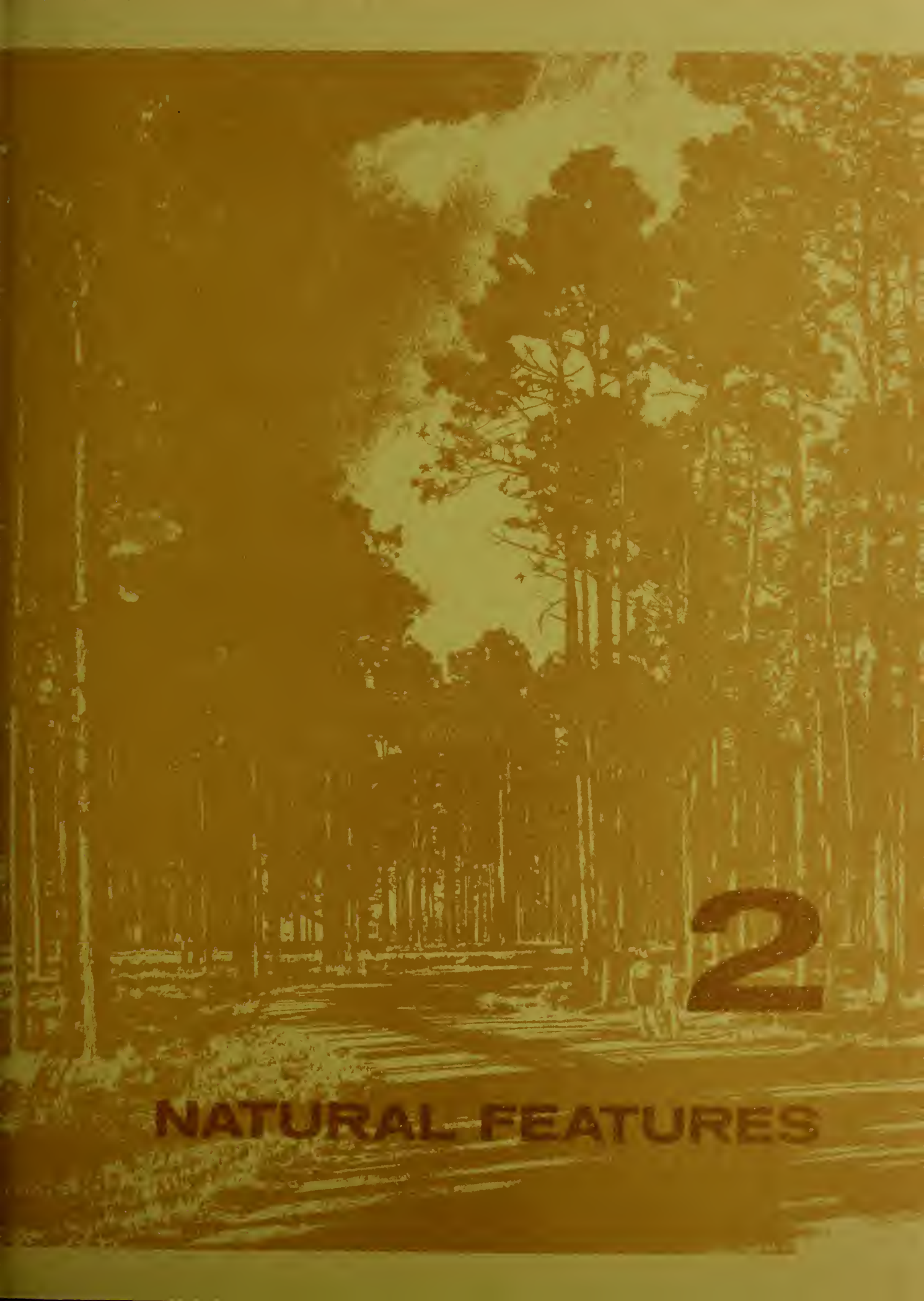
% WHITE
% NEGRO
% INDIAN

ROBESON COUNTY

N

0 5 10
MILES

MAP 3



2

NATURAL FEATURES

CLIMATE

Climate is not a major factor affecting the county's growth potential. An analysis of climate revealed that temperature, rainfall, and wind conditions are ideal for farming. Warm summers and mild winters provide a nine month frost-free growing season that usually has abundant rainfall. Rainfall, which averages about 46 inches per year, is heaviest during the growing season. The period of least rainfall begins during the fall harvest season and continues through the winter. Prevailing winds are southwesterly except in the fall when northeasterly winds prevail. Average wind speeds are about 8 miles per hour and winds rarely reach destructive force. The highest winds are usually in the form of local and brief thunderstorms which occasionally damage field crops.

TOPOGRAPHY

The topography or physical relief of Robeson County was formed by a geologic phenomenon that occurred during the Miocene Period 70 million years ago. Before this period the entire Atlantic Coastal Plain Region was covered by the Atlantic Ocean. Then, due to movements within the earth, the covered Coastal Plain Region rose above sea level exposing the land surface that exists today.

Maps showing the topography of Robeson County at 10 foot height intervals are available from the United States Geologic Survey. However, only 35 percent of the county has been mapped. Therefore, due to the limited amount of available topographic data, the following topographic description has been generalized.

The surface of Robeson County slopes gradually downward in a general south-southeast direction and is relatively flat to rolling. The largest flat areas occur around Pembroke, to the southwest of Maxton, south and east of Lumberton, and to the west

of Marietta.

The flattest and lowest areas (often swamps) occur adjacent to the Lumber River and along many of its tributaries. Gently rolling land is predominate around Rowland, Maxton, Red Springs, Parkton, McDonald, and Lumberton. The more rolling areas are found in the northwest corner of the county along the Lumber River, Rockfish Creek, and Big, Raft, and Ashpole Swamps. The highest and lowest points above mean sea level are about 210 feet and 105 feet respectively, a difference of 105 feet in elevation.

Robeson County's flat and rolling landscape is ideal for nearly all types of development. However, two topographic features, slopes in one area and Carolina Bays, could restrict development.

Slopes will restrict development when they exceed 10 percent. The only slopes in Robeson County exceeding 10 percent are adjacent to Ashpole Swamp. However, this area is not in the path of county growth.

Carolina Bays are eliptical, shallow depressions and are unique to the Coastal Plain Region from southern Virginia to Georgia. In Robeson County, they occur abundantly in the north-northwestern section and northeast of Lumberton. Their length varies from a few hundred feet to about 1 to 2 miles long. Many of the bays are bordered by sand rims which are from 2 to 5 feet high and several hundred feet wide.

The bays limit development because they are poorly drained and have a high water table. Some bays have been drained and cleared for crop production. However, because of the time and expense involved, this has not become a common practice. In general, the bays are not utilized for any purpose. Thus, most remain idle natural wooded areas.

SOILS[1]

As defined by the United States Department of Agriculture's Soil Survey Manual, "Soil is the collection of natural bodies occupying portions of the earth's surface that support plants and that have properties due to the integrated effect of climate and living matter, acting upon parent material, as conditioned relief, over periods of time." Simply stated, soil originates from geology, climate, vegetation, biological organisms, and time.

The soils of Robeson County originated from sediments that were washed from the Piedmont Plateau and deposited into the sea when Robeson County was covered by the Atlantic Ocean. The Piedmont sediments were then subjected to continuous wave action which formed the different soils in the county.[2]

The original U.S.D.A. soil survey of Robeson County, published in 1909, identified 11 types of soil consisting of sands, sandy loams, silts, and clays. Recent information has been compiled identifying more than 40 soil types. Each soil type has been classified on the basis of properties such as texture, consistence, structure, and color. For purposes of simplicity, U.S.D.A. grouped the soils with similar agricultural properties into soil associations. Each soil association consists of two or three major soils which make up the larger percentage of the association's area.

The soils in Robeson County are grouped into six associations. Map 4 shows the distribution of these associations throughout the county. This map is useful for showing general soil areas and the locations of large tracts that are suitable for development. Such a map is not suitable for developing specific sites because the major soils of each association have different

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[1] Information supplied by Mr. Robert Horton, Soil Conservation Service, Lumberton, N. C.

[2] Hearn, Edward W., Soil Survey of Robeson County, North Carolina. (Washington: U. S. Government Printing Office, 1909), p. 12.

limitations for development. For example, Norfolk and Wagram soils have limitations different from those of McColl soil, all of which are in the first association. The soil limitations within an association are shown on Table II. Detailed information about the soils in an association can be obtained from the local County U.S.D.A. office. The six soil associations are discussed below.

Norfolk, Wagram, McColl Association

This association covers 57 percent of the county and occurs mostly in higher elevation areas. About 80 percent of the association is cleared and used for pasture and crops. The principal crops are tobacco, cotton, corn, soybeans, grain, and truck crops.

Each soil is generally well suited for intensive farming. Norfolk and Wagram soils comprise 55 percent of the association and have none to slight limitations when used for septic fields, foundations, and road construction. McColl soils make up about 15 percent of the association and due to wetness have severe limitations for septic fields, foundations, and road construction. Nine minor soils make up the remaining 30 percent of the association. Their limitations for different uses range from slight to severe depending upon their drainage characteristics.

Aycock, Greene, Exum Association

This association, which covers 6 percent of the county, includes wide ridges and large Carolina Bays. About 85 percent of this association's area is cleared and used for crop and pasture. The principal crops are tobacco, cotton, corn, soybeans, grain, and vegetables.

Each soil in this association is well suited for intensive farming. Aycock and Exum soils, which constitute about 50 percent of the association, have none to slight limitations when used for septic tanks, foundations and road construction. Greene soils constitute about 30 percent of the association and have

TABLE II

SOIL INTERPRETATIONS

GENERAL SOIL MAP - ROBESON GOUNTY, N. G.

Soil Association	Soils	Intensive Play Areas	Picnic Areas	Gamp Sites	Foundations For Residences	Foundations For Light Industries	Highway Locations	Residences With Public Sewage	Residences With Basements	Suitability For General Agricultural Grops	Suitability For Forestry*
1	Norfolk	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Very good	Good
	Wagram	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Fair	Good
	McGoll	Severe	Severe	Severe	Moderate	Moderate	Moderate	Moderate	Severe	Good when drained	Very good
2	Aycock	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Moderate	Very good	Good
	Exum	Moderate	Moderate	Moderate	Moderate	Moderate	Slight	Slight	Severe	Very good	Good
	Greene	Severe	Severe	Severe	Severe	Severe	Moderate	Moderate	Severe	Good when drained	Very good
3	Rains	Severe	Severe	Severe	Moderate	Moderate	Moderate	Moderate	Severe	Good when drained	Very good
	Lynchburg	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Severe	Good when drained	Very good
	Goldsboro	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Moderate	Very good	Good
4	Alaga	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Poor	Fair
	Eustis	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Poor	Fair
	Kenansville	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Slight	Fair	Good
5	Johns	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Severe	Good when drained	Good
	Lumbee	Severe	Severe	Severe	Severe	Severe	Severe	Severe	Severe	Good when drained	Good
6	Johnston-Bibb	Severe	Severe	Severe	Severe	Severe	Severe	Severe	Severe	Poor	Good

* Native pine and hardwood.

Source: Preliminary interpretations for General Soils Map, Robeson Gounty, N. G. - only for major soils in each association - by Robert E. Horton, Soil Scientist, Lumberton, N. G.

severe limitations for septic tanks, foundations, and road construction due to wetness and clayey subsoil. The remaining 20 percent of the association consists of minor soils with slight to severe limitations for different uses depending upon their drainage characteristics.

Rains, Lynchburg, Goldsboro Association

This association covers about 15 percent of the county. It includes flat areas and Carolina Bays. About 60 percent of the association's area is cleared and used for crops and pasture. The rest is wooded.

Each soil in this association is well suited for intensive row crop farming; however, drainage is required in most of the area. Lynchburg and Goldsboro soils comprise about 40 percent of the association and have slight to moderate limitations when used for septic fields, foundations, and road construction. The Rains soils make up about 30 percent of this association and due to wetness have severe limitations for septic fields, foundations, and road construction. The remaining 30 percent of the association consists of minor soils with slight to severe limitations for different uses depending upon their drainage characteristics.

Alaga, Eustirs, Kenansville Association

This association covers about 2 percent of the county. It is located in the western and northern part of the county. The soils in this association are low in fertility and have a low water retaining capacity. Crop yields are generally low. In places native vegetation is too sparse and the water supply too low to provide a suitable habitat for wildlife. The soils have slight to moderate limitations when used for septic tanks, foundataions, or road construction.

Johns, Lumbee Association

This association covers about 5 percent of the county. The land is nearly level, and only a few feet of elevation separates

it from floodplain areas. For this reason some local flooding in low areas may occur during periods of extended rainfall.

About 60 percent of this association are wooded wet areas which provide good habitats for wildlife. If the wet areas were drained and cleared, they could be used for farming.

The John soils have slight to moderate limitations when used for septic fields, foundations, and road construction. The Lumbee soils have severe limitations for these uses.

Johnston, Bibb Association

This association covers about 15 percent of the county. The entire association is swampy and floods during periods of high rainfall.

About 95 percent of this association is wooded. About 40 percent of the wooded acreage is owned by large timber corporations, and the other 60 percent is in private farms. Soils in this association are well suited for the production of native hardwoods. Most of this association provides good wildlife habitats. The soils have severe limitations when used for septic fields, foundations, and road construction due to wetness and flooding.

GEOLOGY

A description of the type and structure of the rock underlying Robeson County is important because rocks determine the quality and quantity of available ground water.

The rocks in Robeson County may be grouped into three major series. Based on their characteristics and age, they are: the Volcanic Slate series of the Palezoic Age, the Upper Cretaceous series, and the Upper Miocene series.

The rocks of the Volcanic Slate series are the oldest rocks. They are located several hundred feet below the earth's surface and are rarely reached in wells.

MAP 4

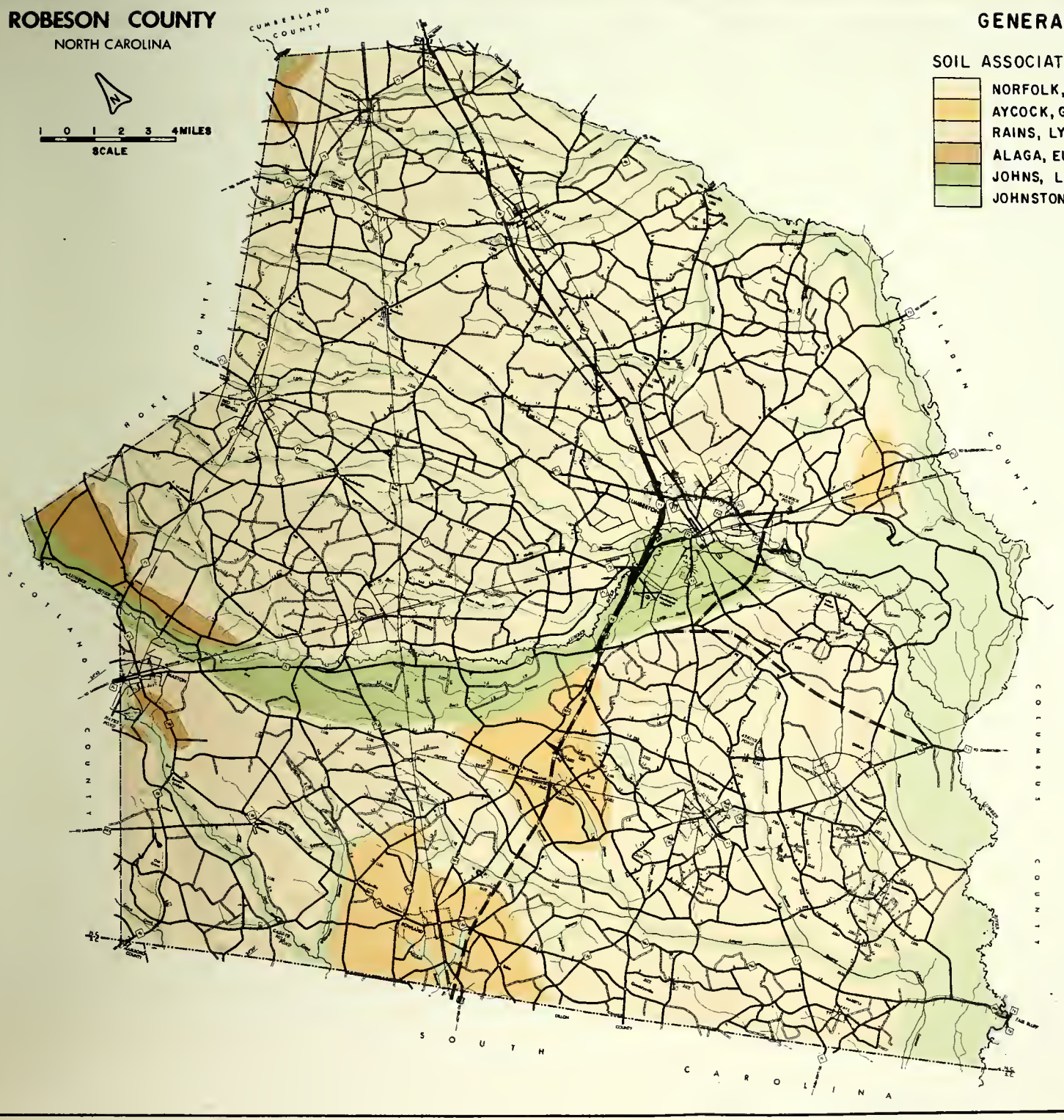
ROBESON COUNTY

NORTH CAROLINA

GENERAL SOIL MAP

SOIL ASSOCIATIONS

- NORFOLK, WAGRAM, McCOLL
- AYCOCK, GREENE, EXUM
- RAINS, LYNCHBURG, GOLDSBORO
- ALAGA, EUSTIS, KENANSVILLE
- JOHNS, LUMBEE
- JOHNSTON, BIBB



The rocks overlaying the Volcanic Slate series belong to the Upper Cretaceous series. The series increases in thickness from more than 300 feet in the north of the county to about 600 feet in the south. The series is known to be the best aquifer[3] in a seven county area north-northwest of Robeson County.[4] It will yield several hundred gallons of water per minute.

In the southern portion of the county, the Upper Miocene series overlays the Upper Cretaceous series. The Upper Miocene series does not exceed 25 feet in thickness and has never supplied large quantities of water to wells.

Generally speaking, the rocks of Robeson County contain a good quality of ground water. The water resources section, later in this study, contains more specific information.

MINERALS[5]

Gravel, clay, marl, and sand are the only minerals common to Robeson County. The first three minerals have no mining potential because today's mining operations require greater quantities of the minerals than may be present in the county.

Sand is not excavated in Robeson County, but it has a mining potential. Good quality sand could be used in manufacturing glass bottles; however, no one has attempted to develop a bottle industry. There are two reasons for this. One relates to the economics of glass bottle manufacturing. The industry requires large power supplies thus making it necessary to obtain low rates.

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[3] Any rock formation that supplies large amounts of water to wells is termed an aquifer.

[4] North Carolina Department of Water Resources, Geology and Ground Water Resources of the Fayetteville Area (Raleigh: North Carolina Department of Water Resources, 1961).

[5] Interview with J. L. Sampair, Division of Mineral Resources, North Carolina Department of Conservation and Development.

Presently, rates for gas and/or electric power are too high in Robeson County for the bottle industry. The second reason is that other counties in the Coastal Plain Region have better quantities and qualities of sand than Robeson County. These two factors limit the potential of sand excavation for bottle manufacturing.

DRAINAGE

Drainage is the natural downward flow of all water and the mode by which it travels, whether through surface ditch, stream, canals, rivers, or combinations of the above. The area drained by local drainage modes form a unit called a watershed area. Water flows from the watershed toward major tributaries which form drainage basins.

Drainage Basin and Watersheds

Robeson County is located entirely within the Lumber River Drainage Basin. Within the confines of the basin boundaries, all surface water eventually drains, directly or indirectly, into the Lumber River.

The Lumber River is formed by the confluence of Drowning and Buffalo Creeks about 10 miles northwest of the Robeson-Hoke county lines. (These creeks are fed by springs thereby giving the Lumber River a good flow even during the driest season). The river enters Robeson County above Maxton and flows in a general southeasterly direction almost parallel with the state line until it reaches Big Swamp, where it turns sharply and flows in a southwesterly direction into South Carolina.

The Lumber River, Cold Camp Creek, and Ashpole Swamp Creek form watershed areas draining approximately 90 percent of the county. The remaining 10 percent of the county is drained by two small watersheds along the South Carolina state line. Map 5 shows these watersheds.

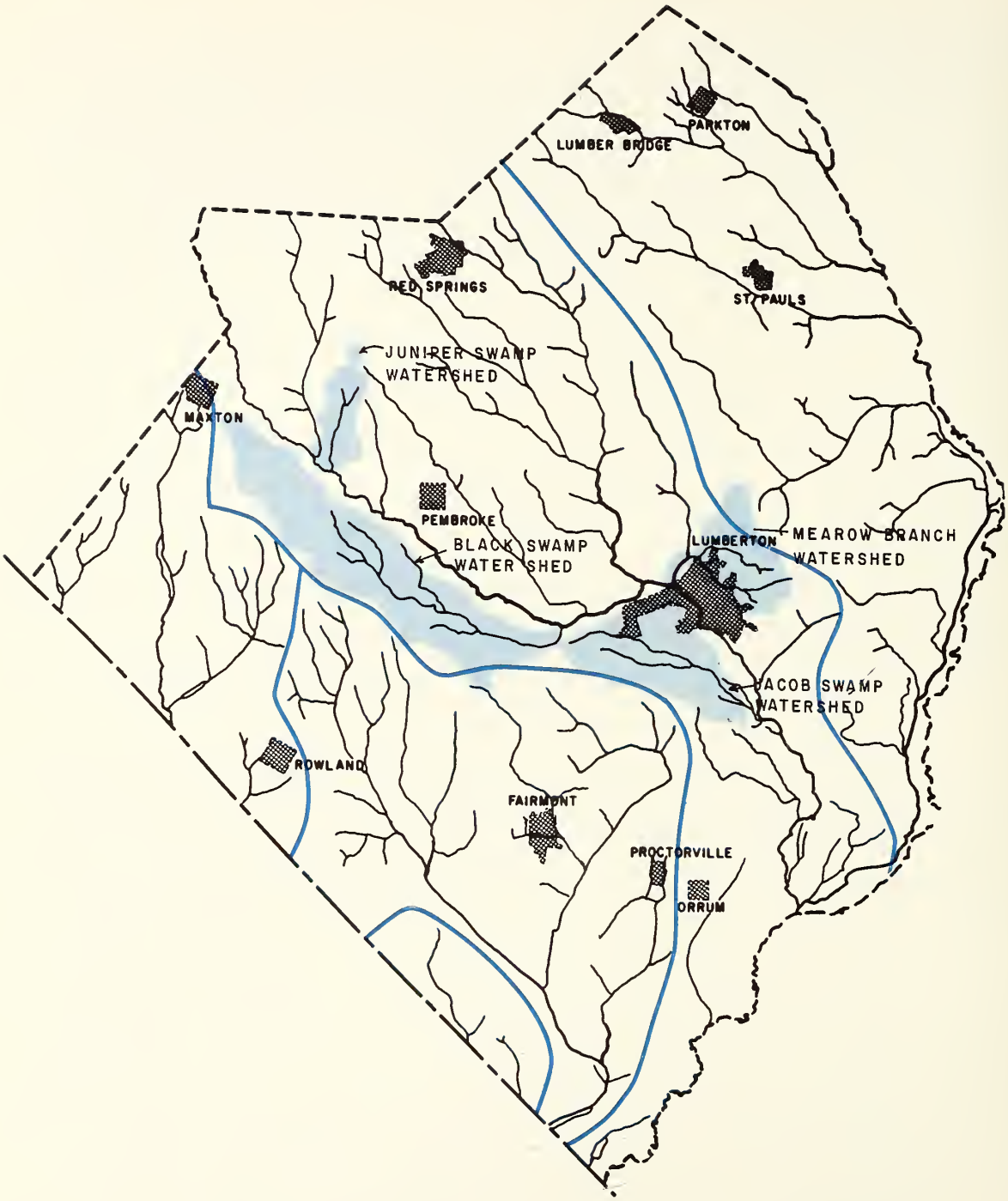
Watershed Projects

The Watershed Protection and Flood Control Act of 1954, Public Law 566, is among the major programs enacted by Congress emphasizing resource development. The Act authorized the Soil Conservation Service of the Department of Agriculture to administer and conduct small watershed projects. Watershed projects are a means of providing multiple-use development of water resources to benefit communities, counties, and regions. Watershed projects help conserve and supply water; halt soil erosion; protect roads, buildings, and property against floods; improve drainage of agricultural land; provide waterbased recreation opportunities; and help build more prosperous communities through more intensive use of land and water.

There are four small watershed projects proposed in Robeson County as shown by Map 5. They are as follows:

(1) The Juniper Swamp Watershed work plan was completed in March, 1964, and voted against by a majority of the people living in the project area. Unless the project receives a favorable majority vote, it will never be implemented. The watershed area contains about 3,515 acres of land which has three principal watershed problems: (a) inadequate land treatment measures and practices on individual farms, (b) inadequate drainage, and (c) flood damage to crops and pasture. Objectives were formulated and proposed to solve these problems. The objectives included: (a) improvements in on-farm conservation land treatment, (b) adequate outlets for small drainage ditches, and (c) reduction of flood damage to a point that any remaining damages could be tolerated.

The installation cost is estimated about $307,000 and will be shared by the Federal government and landowners in the project area. The Federal government's share is about $210,500 and the remaining $96,500 will be collected from taxes levied to landowners.



WATERSHEDS AND WATERSHED PROJECTS

WATERSHED BOUNDARIES
WATERSHEDS PROJECT

ROBESON COUNTY

N

0 5 10
MILES

MAP 5

(2) The Back Swamp Watershed is located in the central part of Robeson County and lies generally south of and parallel to the Lumber River. The watershed is a little more than 15 miles in length and about three miles at the widest point and covers an area of about 21,820 acres. The project covers three watershed problems that are contributing heavily to the extremely low income of 240 farm families. These problems are: (a) inadequate conservation treatment of land on individual farms, (b) flood damage to crops, other farm property and public roads, and (c) poor drainage of crop and pasture land.

The project was formulated in March, 1965, on the basis of two objectives. Need for: (a) a substantial increase in the acreage of land properly treated with soil and water conservation practices, and (b) improvement of principal channels to provide adequate drainage and to reduce flood damage.

The installation cost is estimated at around $1,200,000 and will be shared by the Federal government and landowners in the project area. The Federal government's share is about $850,000, and the remaining $350,000 will be collected from taxes levied to landowners.

(3) The Jacob Swamp Watershed is located near the center of Robeson County and lies south of and adjacent to the Lumber River at Lumberton. The population of the watershed area is about 5,500, of which 800 live on farms and 4,700 live in and near Lumberton. The watershed covers an area of about 10,800 acres, and approximately 1,350 acres lie within the corporate limits of Lumberton.

Three watershed problems include: (a) inadequate conservation treatment of land on individual farms, (b) poor drainage of farmland, and (c) flooding of

agricultural, urban and residential areas.

The overall purpose of the project is to improve the economic position of the people living in the watershed. To accomplish this, the following objectives were established: (a) conservation land treatment to assure adequate conservation measures, (b) improvement of principal stream channels to provide suitable drainage and flood protection, and (c) protection against the highest known flood on the Lumber River.

The installation cost is estimated about $753,000 and will be shared by the Federal government and landowners in the project area. The Federal government's share is about $551,000 and the remaining $202,000 will be collected from taxes levied to landowners. A public hearing will be held in 1969.

(4) The Meadow Branch Watershed is located to the north of Lumberton and part of the watershed extends into the incorporated area.

The watershed is about 7,400 acres in size. Approximately 4,540 acres of this is cleared land and 2,860 acres are in forest.

The population of the watershed area is about 3,800. Of this number, 550 are farm people and 3,250 are residents of Lumberton.

The watershed project was formulated to provide solutions to the following watershed problems: (a) inadequate conservation treatment of farmland, (b) flooding of cropland, and (c) unsatisfactory outlet channels for on-farm water disposal systems.

The installation cost is estimated about $369,000 and will be shared by the Federal government and landowners in the project area. The Federal government's share is about $256,000 and the remaining $113,000 will be collected from taxes levied to landowners. A public hearing will be held in 1969.

Major Poorly Drained Areas

Due to the relatively flat terrain most of the county drains slowly. Slow drainage results in water accumulations which create major poorly drained areas or wetlands. There are three types of wetlands in Robeson County. These are listed below and are shown on Map 6.

(1) Inland Open Fresh Water

Inland open fresh water wetlands consist primarily of lakes and grist mill ponds, and do not include streams, rivers, and farm ponds. Water depths are shallow (they seldom exceed 12 feet). A 250 acre lake owned by Carolina Power and Light Company and a 100 acre lake owned by the Lumber Recreation Center comprise the major inland open fresh water wetlands.

(2) Wooded Swamps

Wooded swamps border most of the streams in the county. Most swamps contain a depth of 1 to 4 feet of brown-stained water. However, some of the swamps become relatively dry during dry seasons.

The Lumber River and Ashpole and Big Swamp Creeks are bordered by large swamps. Lennon's Marsh, a 900 acre impounded area, is also a swamp.

(3) Carolina Bays

Carolina Bays are scattered throughout the county, but occur most frequently in the northern and eastern parts of the county. These wetland areas are usually wooded and their soils are moist to waterlogged except during periods of drought.

None of the wetland areas in their natural state are suitable for development, but they make good natural, wooded areas for waterfowl. Table III provides information on each wetland type and indicates their potential as a habitat for waterfowl.

TABLE III

WETLAND TYPES

Wetland Type	Approximate Acreage	Principal Wildlife Species	Development Potential For Waterfowl
Inland Open Fresh Water	550	Muskrat, racoon, mink, otter, wood duck, ring-necked duck, black duck	Fair to good
Wooded Swamps	100,200	Rabbit, gray squirrel, racoon, mink, otter, wood duck, black duck, mallard, ring-necked duck	Fair to good
Carolina Bays	69,500	Rabbit, gray fox	Negligible

Summary

All of Robeson County lies within the Lumber River Drainage Basin. Because of low, level terrain, the county drains slowly. Areas subject to flooding and swamps strip the Lumber River and other major tributaries. Carolina Bays, found in the northern and eastern part of the county, further complicate drainage. The bays are areas with high water table which are randomly scattered throughout otherwise well-drained areas.

Poor drainage results in damages to crops, roads, buildings, and property. The County's S.C.S. has attempted to reduce damage through four small watershed projects. However, the first two were not approved and the remaining two have not yet been voted upon. Approval of these projects and any future projects could help build a more prosperous county through more intensive use of land and water.

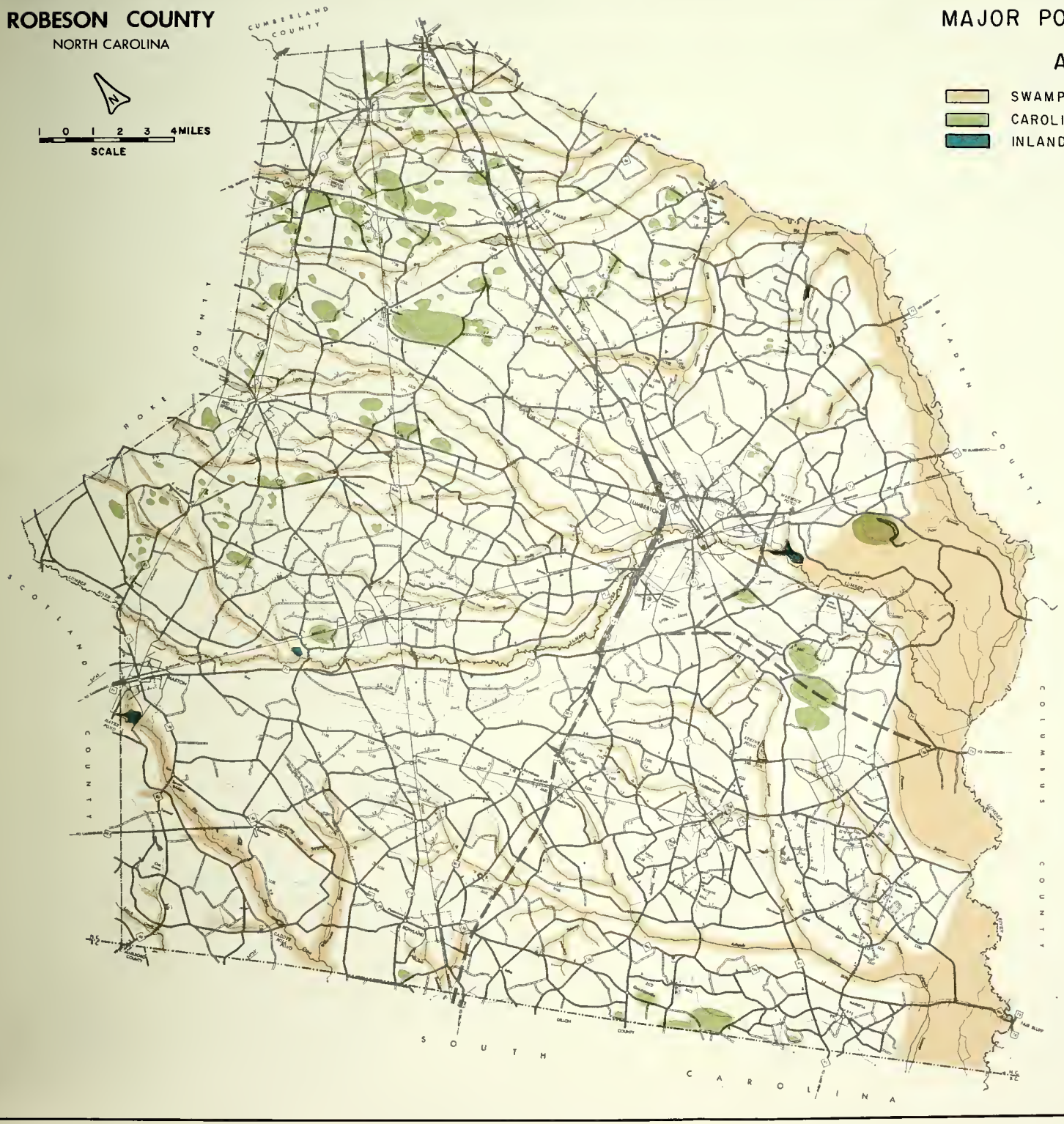
ROBESON COUNTY
NORTH CAROLINA

MAP 6

MAJOR POORLY DRAINED AREAS

- SWAMP
- CAROLINA BAYS
- INLAND FRESH WATER AREAS

1 0 1 2 3 4 MILES
SCALE



WATER RESOURCES

The amount and quality of water available has been a limiting factor in the growth of many counties, and will continue to limit development under an expanding population. Recognizing the fact that there may be water supply limitations in Robeson County, the ground and surface water will be studied in this section.

Ground Water

Ground water originates from rainfall which is dispersed in three basic ways. Part of the rainfall is dispersed by streams as direct runoff forming surface water, part evaporates and returns to the atmosphere, and the remaining part filters downward through the ground to become ground water.

Ground water in the county is of good quality. Generally, it is soft, low in dissolved solids, and requires little or no treatment. In the northwestern part of the county it is slightly acidic and objectionable iron contents are found in the Red Springs area. (The Town of Red Springs was named after red stains made by the locale's ground water).

In the county there is no evidence of ground water contamination, and chances of surface pollution are slight when wells are properly constructed. Many types of wells are used including driven, dug, bored, and drilled wells. Wells yield moderate to large supplies of ground water throughout the county.

The water supply is obtained from two principal aquifers. The Cretaceous Sand Aquifer releases large yields of water useable for municipal, industrial, and domestic purposes. Shallow wells in this aquifer yield 20 to 50 gallons per minute, whereas deep wells yield anywhere from 300 to 900 gallons per minute. The Cretaceous Clay Aquifer releases small yields of water which limits its use for municipal, industrial, and domestic purposes. Wells in this aquifer seldom yield more than 15 gallons per minute.[6] This area of limited ground water supply is shown on Map 7.

[6] North Carolina Department of Water Resources, op. cit.

Within the county all municipal (excluding Lumberton), domestic, and industrial water supplies are obtained from wells. The municipalities using ground water supplies are: Fairmont, Maxton, Pembroke, Red Springs, Rowland, Saint Pauls, and Parkton.

Surface Water

Robeson County's largest source of surface water is the Lumber River. The City of Lumberton's domestic water supply is obtained from the river through an intake near the city's west boundary. Some industries obtain their water supplies from the Lumber River. Carolina Power and Light Company on U. S. 74, north of Lumberton, uses the Lumber River for discharge of water from cooling ponds. Towns and industries situated near the river dispose their wastes into the river. The river is also used for fish and wildlife propagation, irrigation, and bathing. It is a valuable natural resource, vital to the economy and welfare of the county.

In the future, the value of the Lumber River will depend upon the quantity and quality of its water. Recorded river flow reveals that even during prolonged periods of drought a sufficient quantity of water is available to meet present and future needs. For the period 1927-1967, the minimum flow recorded was about 50,000,000 gallons per day.

The quality of the county's surface water has been studied by the North Carolina Stream Sanitation Committee. The Committee revealed that if the river is to be preserved for its present or potential best usage, manmade pollution must be controlled. They identified sources polluting the Lumber River and some of its tributaries. Pollution sources as of 1968 are listed below:[7]

(1) Town of Fairmont

Fairmont is discharging inadequately treated sewage. A new treatment facility is being planned and construction will probably not begin within six months.

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[7] Interview with Julian Taylor, North Carolina Department of Water and Air Resources.

(2) City of Lumberton

Untreated sewage and industrial wastes are being discharged by the City of Lumberton and nearby industries. Recently, the city received a Federal grant to construct a new sewage treatment plant. This plant is scheduled to be completed by 1971 and will treat all domestic and industrial wastes currently contributed by the city and some industries in the area. Other industries will provide separate treatment facilities.

(3) Town of Maxton

Maxton's sewage is inadequately treated. The city is trying to obtain a Federal grant to aid in constructing a new treatment plant.

(4) Town of Pembroke

Pembroke has a secondary treatment plant, but it is inadequate because demands exceed its designed capacity. Plans to renovate the existing plant are being prepared.

(5) Town of Rowland

Rowland is discharging inadequately treated sewage. A new treatment plant already under construction will correct the situation.

(6) Carolina Power and Light Company

Carolina Power and Light Company's W. H. Weatherspoon Steam Station discharges two types of industrial wastes to the Lumber River, namely flyash and condenser cooling water. The flyash is discharged into settling ponds which are adequate. The cooling water, at a high temperature, is discharged into ponds where it cools before being released into the Lumber River. No temperature violations have been found in the Lumber River in recent years. However, the Company has been cautioned to exercise extreme care because during low stream flow periods the water temperature may increase and endanger fish or other water organisms.

Stream Classification

Most of the surface waters in Robeson County have been assigned classifications by the State Stream Sanitation Committee. These classifications are based upon the existing "best usage" of the various streams as determined by studies. Following public hearings the streams in Robeson County were classified as follows:[8]

Class A-II - Suitable as a source of water for drinking, culinary, or food processing purposes after approved treatment equal to coagulation, sedimentation, filtration, and disinfection, and other usage requiring waters of lower quality.

Class B - Suitable for outdoor bathing and any other usage requiring waters of lower quality.

Class C - Suitable for fishing and fish propagation, and any other usage requiring waters of lower quality.

Class D - Suitable for agricultural and industrial cooling and process water after treatment by uses as may be required under each particular circumstance.

Ashpole Swamp and Big Swamp, two of the three major streams in the county, have a "C" classification which makes them unsuitable as a source for drinking water and swimming. The Lumber River, the county's largest stream, has "A-II, C, and B" classifications which make it suitable as a source for drinking water, swimming, and fishing depending on the particular section. The only "D" classifications which occur are small minor tributaries. Map 7 shows the different classifications throughout the county.

Summary

Most of the water used for domestic consumption in Robeson

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[8] State Stream Sanitation Committee, Classification and Water Quality Standards. (Raleigh: North Carolina Department of Water and Air Resources).

ROBESON COUNTY
NORTH CAROLINA

MAP 7

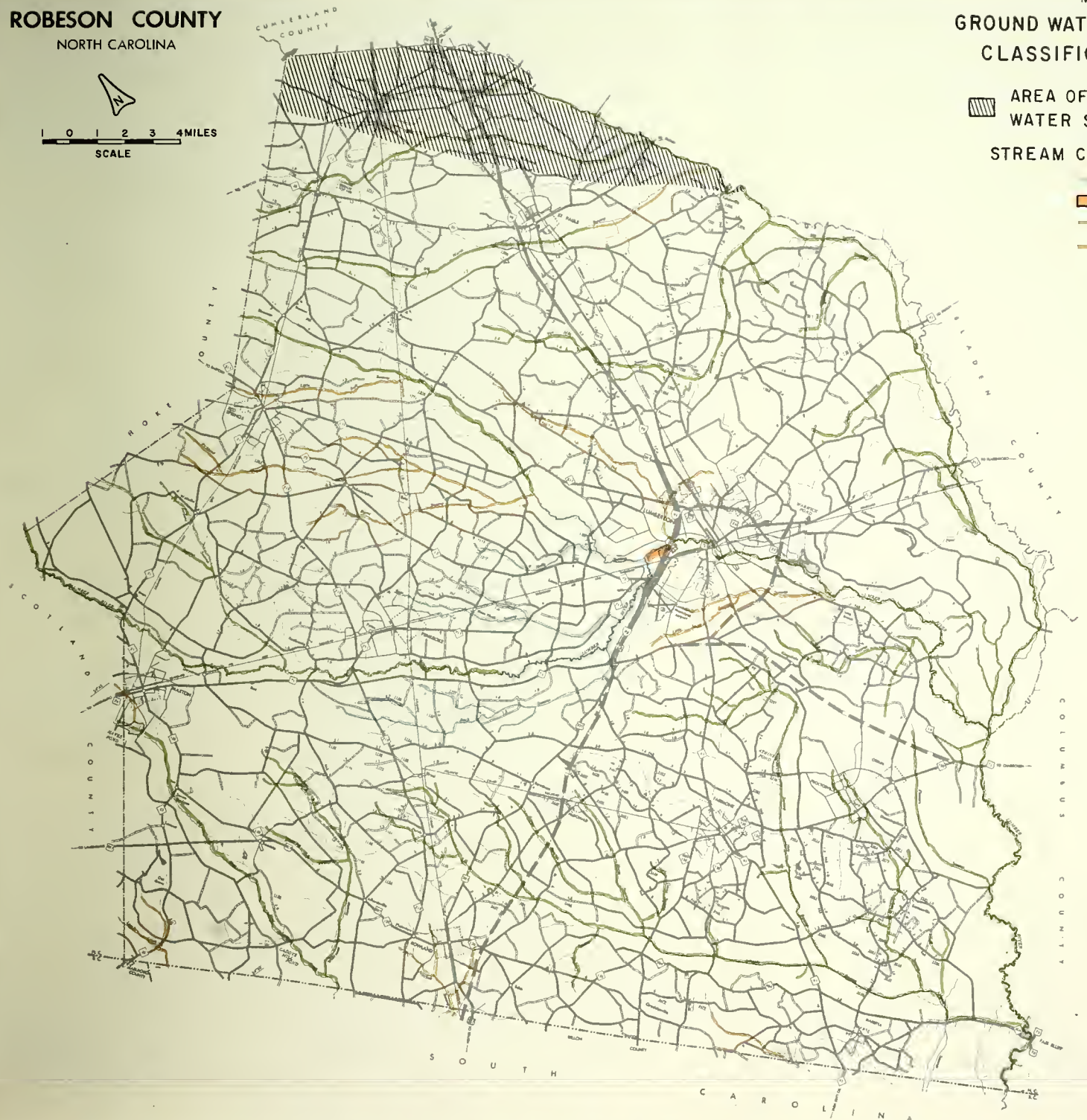
GROUND WATER AND STREAM CLASSIFICATIONS MAP

AREA OF LIMITED GROUND WATER SUPPLY

STREAM CLASSIFICATONS

- A-II
- B
- C
- D

1 0 1 2 3 4 MILES
SCALE



County comes from ground water. The supply is virtually unlimited. Generally speaking, the ground water is of good quality and requires minimum treatment.

The quantity of surface water is many times greater than the present demand. Stream quality is generally good, but only a small percentage of the streams have water suitable for human consumption. Therefore, in the future, ground water will be the major water source for human consumption and surface water will supply most of the water for agriculture and industrial purposes. Combined, the water resources will be sufficient to supply almost unlimited needs.

FACTORS LIMITING DEVELOPMENT

Natural limitations on development are summarized by Map 8. Soil areas with high water tables or subject to flooding place moderate to severe limitations upon urban development. These areas are generally swamps or Carolina Bays. Soils south of the Lumber River have fewer limitations for urban development than those north of the river. Carolina Bays and swamps, especially around Lumber Bridge, Parkton, and Saint Pauls will limit urban development.

Water supplies, both ground and surface, are abundant except in one small area along the county's north, northeastern boundary. Ground water supplies in this area are limited. Other natural features discussed in the chapter were generally conducive for urban development.

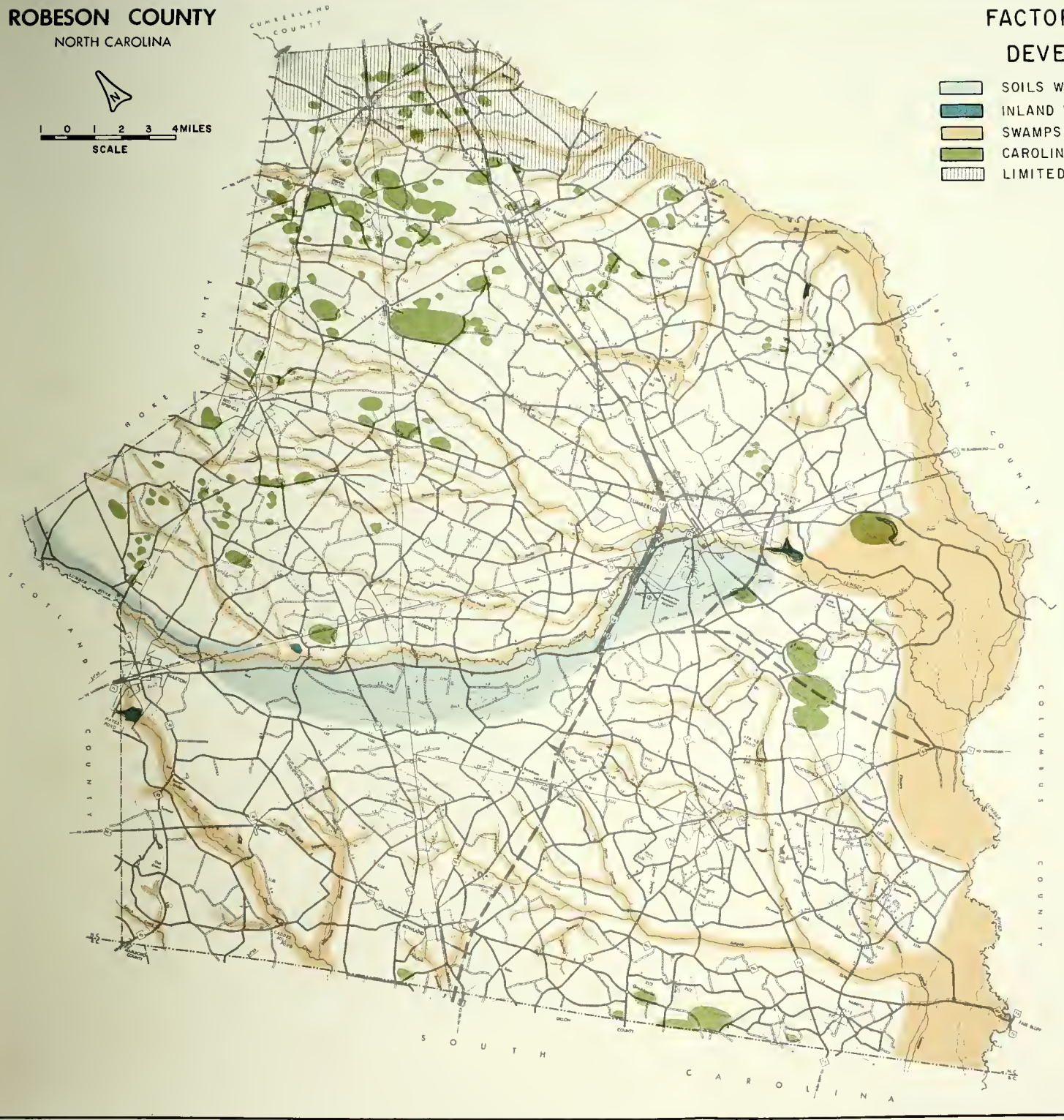
ROBESON COUNTY
NORTH CAROLINA

MAP 8

FACTORS LIMITING DEVELOPMENT

- SOILS WITH HIGH WATER TABLE
- INLAND FRESH WATER AREAS
- SWAMPS
- CAROLINA BAYS
- LIMITED GROUND WATER SUPPLY

1 0 1 2 3 4 MILES
SCALE



3

MANMADE FEATURES

In the preceding chapter, Robeson County's natural features were discussed with reference to limitations and capabilities exerted on future land uses. In this chapter, emphasis will center on existing major manmade features that influence future development. Without information about features such as utilities, transportation facilities, and major community facilities, potential development areas could not be delineated.

UTILITIES

Telephone

Telephone service in Robeson County is provided by Carolina Telephone and Telegraph Company and Southern Bell Telephone and Telegraph Company. C.T.T. Company has exchanges in Saint Pauls, Parkton, Red Springs, and Maxton. The company serves the general northern and western one-third of Robeson County. No toll free calls can be made between the companies' exchanges.

S.B.T.T. Company has exchanges in Lumberton, Pembroke, Fairmont, and Rowland and serves the remaining two-thirds of Robeson County. A toll free call system is maintained between the S.B.T.T. Company's exchanges in the county. All other calls are long distance.

Both companies provide local and long-distance service. Direct Distance Dialing is possible for long-distance calls and ample local circuits are available throughout the county.

Electrical Power

The major source of electrical power is provided by Carolina Power and Light Company. The company maintains the Weatherspoon Generating Plant south of Lumberton. Six major electrical transmission lines traverse Robeson County. Four 110-132 kilovolt and two 23-110 kilovolt electrical lines are shown on Map 9. These transmission lines are also connected with C.P.&L.'s 47 county integrated power system. By means of the integrated system,

Robeson County is capable of receiving electrical power from six generating plants.

The Rural Electrification Authority also supplies electrical power and maintains power lines in the county. The R.E.A. purchases electrical power at wholesale rates from C.P.&L. and distributes it to rural areas. In 1968, the R.E.A. maintained a total of 319 miles of electrical power lines. The R.E.A.'s largest service area is north and west of Lumberton. However, within R.E.A.'s service area, C.P.&L. supplies electrical power to Saint Pauls, Parkton, Lumber Bridge, Red Springs, Pembroke, Maxton, and the area surrounding each town. Both systems supply Robeson County with adequate electrical power for residential, commercial, and industrial uses.

Natural Gas

The North Carolina Gas Corporation supplies natural gas to Robeson County through sixteen and twelve inch high pressure pipelines. Smaller pipelines branch off the major pipelines to serve the towns of Lumberton, Maxton, Saint Pauls, Red Springs, and industries. Officials of the North Carolina Public Utilities Commission estimate that the county's natural gas supply is better than average. Map 9 shows the locations of major gas pipelines in Robeson County.

Water and Sewer

Water service is limited to municipalities within the county. All municipalities except Lumber Bridge, Proctorville, Orrum, Marietta, and McDonald have domestic municipal water supplies. Red Springs is the only municipality providing water outside its boundaries. The county participated in installation costs for a water line extension to an industrial plant one mile north of Red Springs. In the future water lines will be extended outside Lumberton to an industrial site adjacent to the Municipal Airport. Water supply is adequate for present consumption. However, as increases occur in per capita usage, it will be necessary to

increase the capacities of some municipal systems. Red Springs may have to increase their system's water capacity by 1975.[1] Fairmont's present water system will serve about 1,000 additional people; therefore, improvements will probably be necessary in the future.[2] Parkton's water system has a 216,000 gallon pumping capacity per day. This is sufficient, but if the output was increased by the addition of large water consuming industries, the capacity could possibly become insufficient. Lumberton, Maxton, Rowland, and Saint Pauls can more than double their present consumption rates.

Sewer service is limited to Lumberton, Red Springs, Fairmont, Pembroke, Rowland, and Maxton, and could possibly be extended outside their municipal boundaries in the future. Sewer lines will be extended outside Lumberton to serve the same area served by water lines. Map 9 shows the areas served by municipal water and sewer.

TRANSPORTATION

Road System

Two major north-south highways pass through Robeson County, U. S. 301 and I-95. U. S. 301 is a two-lane non-access controlled highway and provides connections to four-lane access controlled I-95. Both highways extend from the New England States to Florida. I-95 has five existing interchanges, two are in Lumberton and the remainder are located at N. C. 20, U. S. 301, and U. S. 74. Future interchanges are planned near McDonald and Rowland, on the portion of I-95 yet to be constructed.

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[1] Division of Community Planning, Red Springs Community Facilities Plan. (Raleigh: North Carolina Department of Conservation and Development, 1967), p. 46.

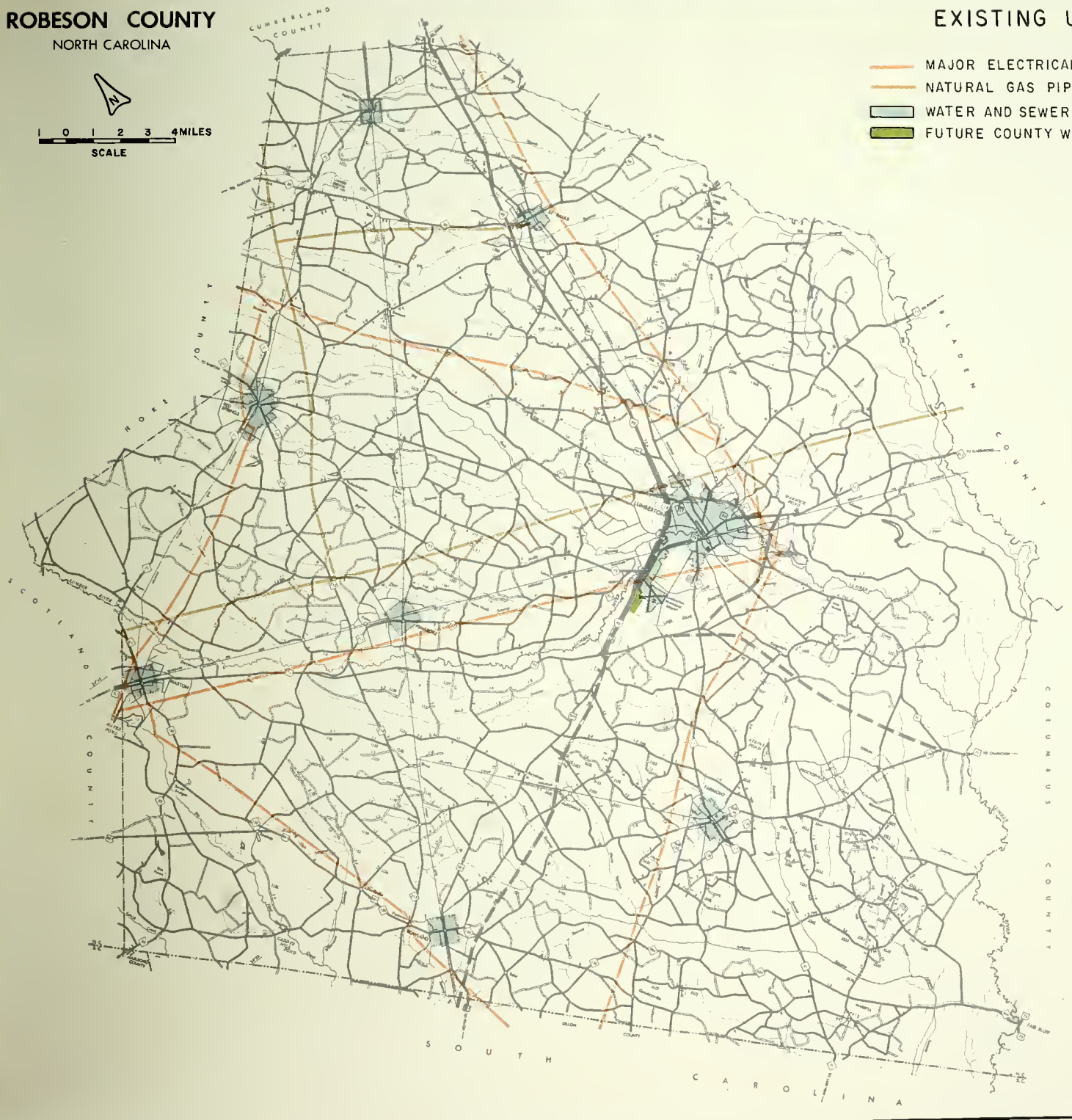
[2] Division of Community Planning, Fairmont Community Facilities Plan. (Raleigh: North Carolina Department of Conservation and Development, 1967), p. 28, 29.

MAP 9

ROBESON COUNTY
NORTH CAROLINA

EXISTING UTILITIES

- MAJOR ELECTRICAL TRANSMISSION LINES
- NATURAL GAS PIPE LINES
- WATER AND SEWER SERVICE
- FUTURE COUNTY WATER & SEWER



U. S. 74, the major east-west highway is scheduled for improvement. Sometime after 1970, U. S. 74 will be relocated from I-95 to Whiteville. Access will eventually be controlled by interchanges at I-95, N. C. 41, and N. C. 301. U. S. 74 provides direct access with the state port in Wilmington, 73 miles to the southeast. Map 10 shows these and other primary North Carolina highways.

The map also shows average daily 1967 traffic counts for primary highways in the county. Traffic is heaviest along I-95 and U. S. 301 from Lumberton to South Carolina. After proposed I-95 is completed, traffic volumes along U. S. 301 from Lumberton to South Carolina will decrease substantially. Other high traffic counts were recorded on U. S. 74, N. C. 211, N. C. 71, and N. C. 41.

As of January, 1968, the North Carolina State Highway Commission reported a total of 1,695.25 miles of state and municipally maintained roads in Robeson County. Their figures divide the road mileage into the following categories:

A. Primary Roads	
1. Rural Paved	284.06
2. Municipal Paved	32.67
3. Unpaved	0.00
Total Primary Highways	316.76
B. Secondary Roads	
1. Rural Paved	945.90
2. Rural Unpaved	387.30
3. Municipal Paved	40.39
4. Municipal Unpaved	4.90
Total Secondary Roads	1,378.49
C. Grand Total	1,695.25

By means of this extensive road system, most of the county is accessible. However, there are some areas where development potentials are limited because traffic is hindered by unpaved roads. These roads are shown on Map 10.

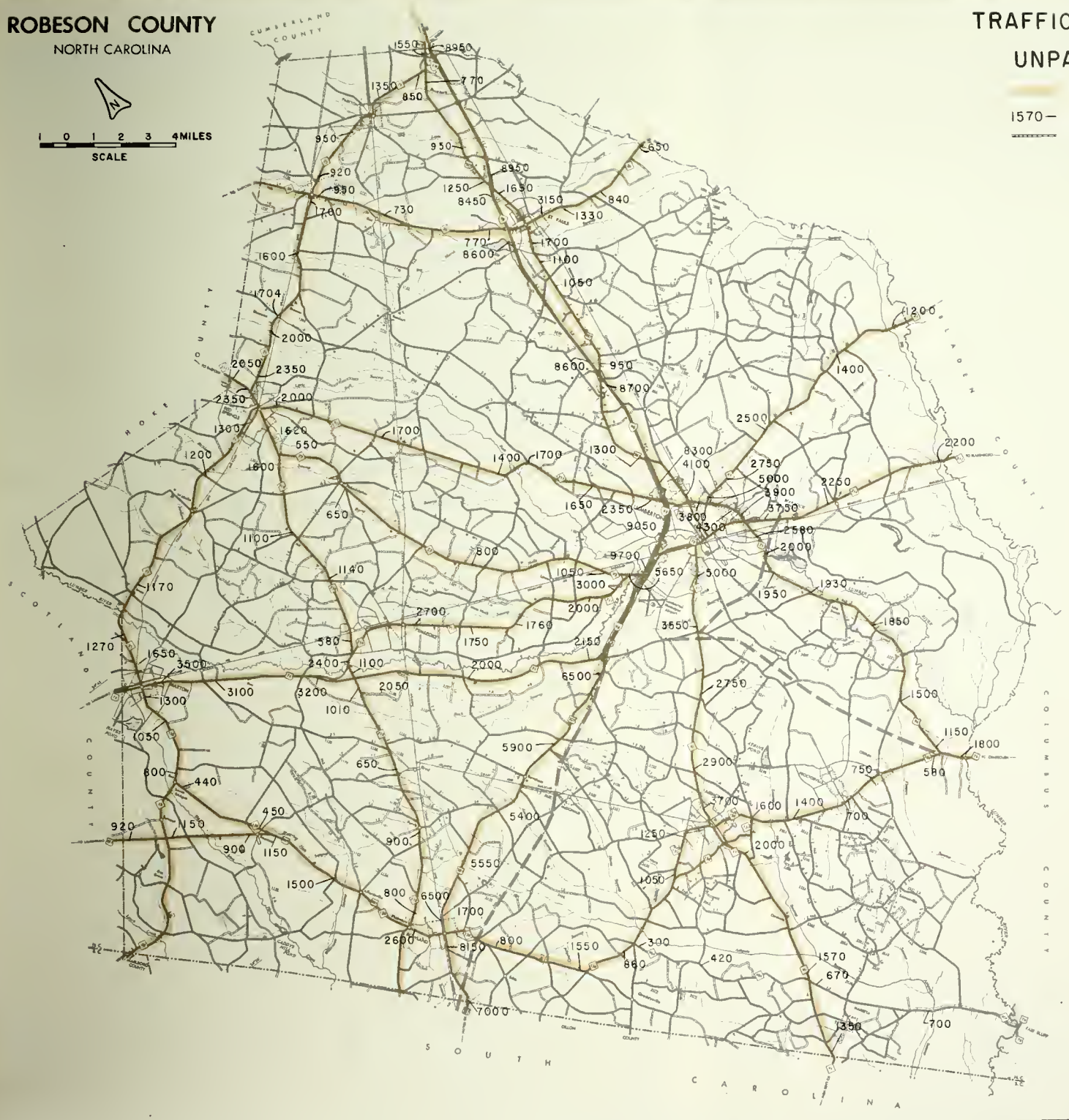
ROBESON COUNTY
NORTH CAROLINA

MAP 10

TRAFFIC VOLUMES AND UNPAVED ROADS

PRIMARY ROADS
1570— TRAFFIC VOLUMES
UNPAVED ROADS

1 0 1 2 3 4MILES
SCALE



Rail System

Tracks of the Seaboard Coastline Railroad traverse the county in all directions and pass through all towns except Proctorville, Orrum, Marietta, and McDonald. Local passenger service is provided once daily at Rowland, Pembroke, and Parkton. A through train run between New York City and Jacksonville, Florida, makes a daily scheduled stop in Pembroke.

Nine freight trains, two making scheduled stops in Pembroke, operate daily on the Seaboard's main railroad line. Additional freight service is available to towns along Seaboard's branch railroad lines. Four freight trains, two making scheduled stops, operate daily between Maxton, Pembroke, and Lumberton. This branch line provides direct railroad services to the port of Wilmington for shipment of goods overseas. Freight trains making one daily scheduled stop also serve Lumber Bridge, Red Springs, and Saint Pauls. The county railroad system coupled with railroads in other urban areas affords adequate rail transportation to all points in the nation. Map 11 shows the railroad lines.

Bus

The Continental Bus Company has scheduled bus stops in every town except Marietta, McDonald, and Proctorville. Lumberton, having nine scheduled bus arrivals and departures per day, provides major county bus service. Bus service is provided to Fayetteville, Laurinburg, and Florence, South Carolina, where other major bus companies operate terminals.

Motor Freight

The county is served by 34 trucking firms providing service connections to all major metropolitan areas of the United States and Canada. Fifteen of these firms operate on both an inter- and intrastate basis and the remaining nineteen operate on an interstate basis. One motor freight company maintains a terminal in Lumberton. The remaining trucking firms maintain terminals in other areas, but will stop in Robeson County to load or unload merchandise.

Air

The Lumberton Municipal Airport is located approximately 4 miles south of downtown Lumberton. Primary access is provided by U. S. 74, and the I-95-N. C. 711 interchange about 0.4 of a mile from the airport. Access is state secondary road 2501.

The capacity of the airport is greater than present use demand. Three twin-engine and thirty-nine single-engine airplanes are based at the airport. According to an estimate by the airport manager, there is room for about twenty additional airplanes.

Future improvements are planned and will be financed jointly by the City of Lumberton, the county, and a Federal Aviation Agency grant. Plans provide for extension of one runway from 5,000 feet to 5,600 feet, and a new administrative building housing a lounge and conference room.

The airport plays a key role in attracting industry to the county. Industries, such as B. F. Goodrich, Stedman, and Alpha Cellouse, fly their company executives to Lumberton. No passenger service is offered at the municipal airport.

The Fayetteville Airport, which is located 30 minutes north of Lumberton on U. S. 301, is served by Piedmont Airlines and has 23 scheduled flights per day. Piedmont provides connections to key cities in the south and as far north as New York.

MAJOR COMMUNITY FACILITIES

Education and Medical

The Robeson Technical Institute, Pembroke State College, and Southeastern General Hospital are major community facilities. The Technical Institute offers courses for trades. Programs of special interest are: pre-employment training for both high school graduates and young adults in skilled trades; job instructors, job relations, and job methods training for supervisors; related instruction training for apprentices; and extension

training for employed workers. Pembroke State College is a state maintained four-year liberal arts college. It is a well-equipped, fully accredited college offering major courses of study in Language and Literature; Education and Psychology; Mathematics and Science; Social Studies and Philosophy. An evening education program will begin during 1971.

The Southeastern General Hospital, a new 260 bed hospital, located in Lumberton, provides modern medical and surgical facilities and a fully qualified staff of nurses, physicians, and surgeons all maintained on a full-time basis. Map 11 shows the locations of these facilities.

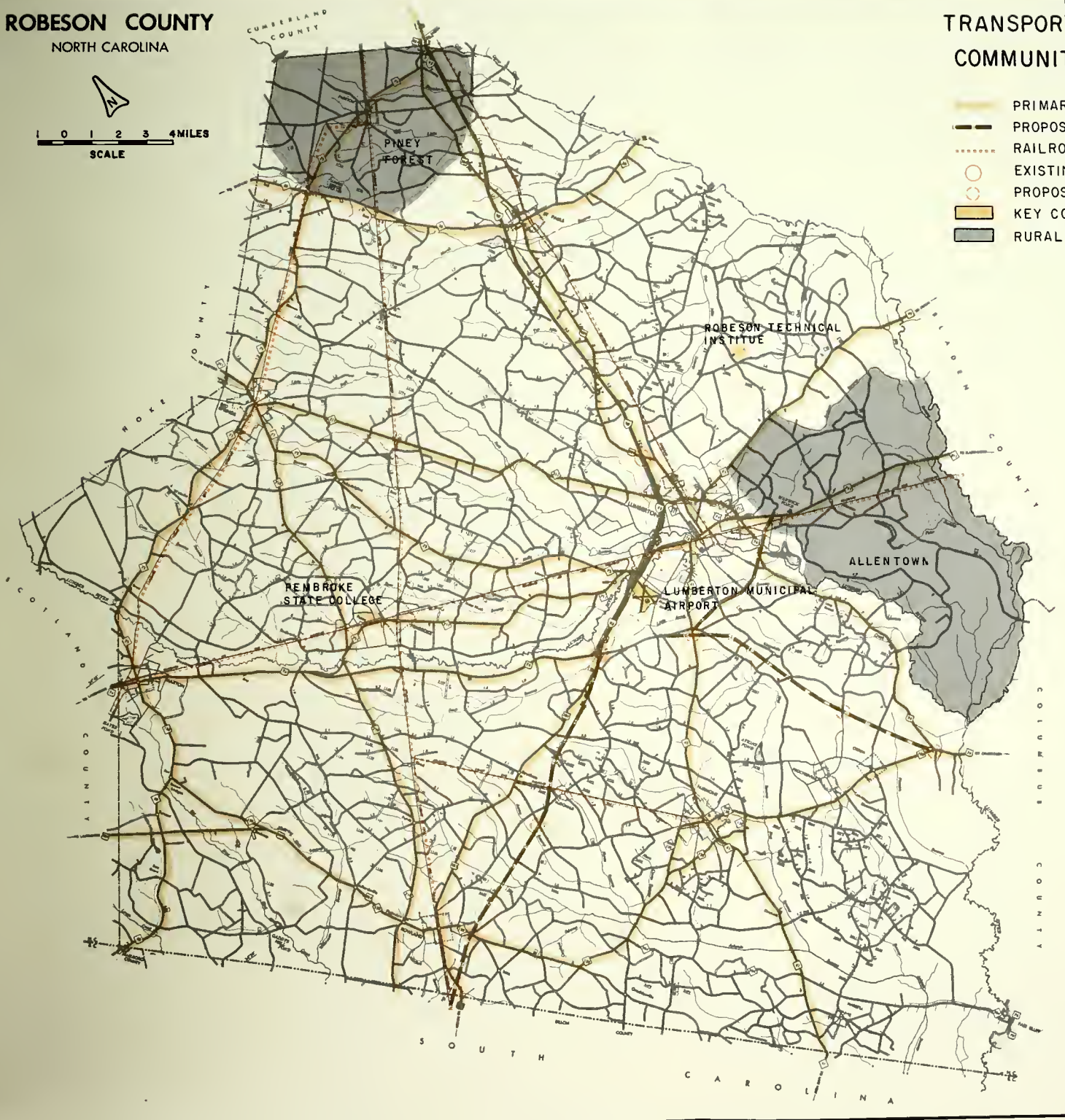
Rural Fire Districts

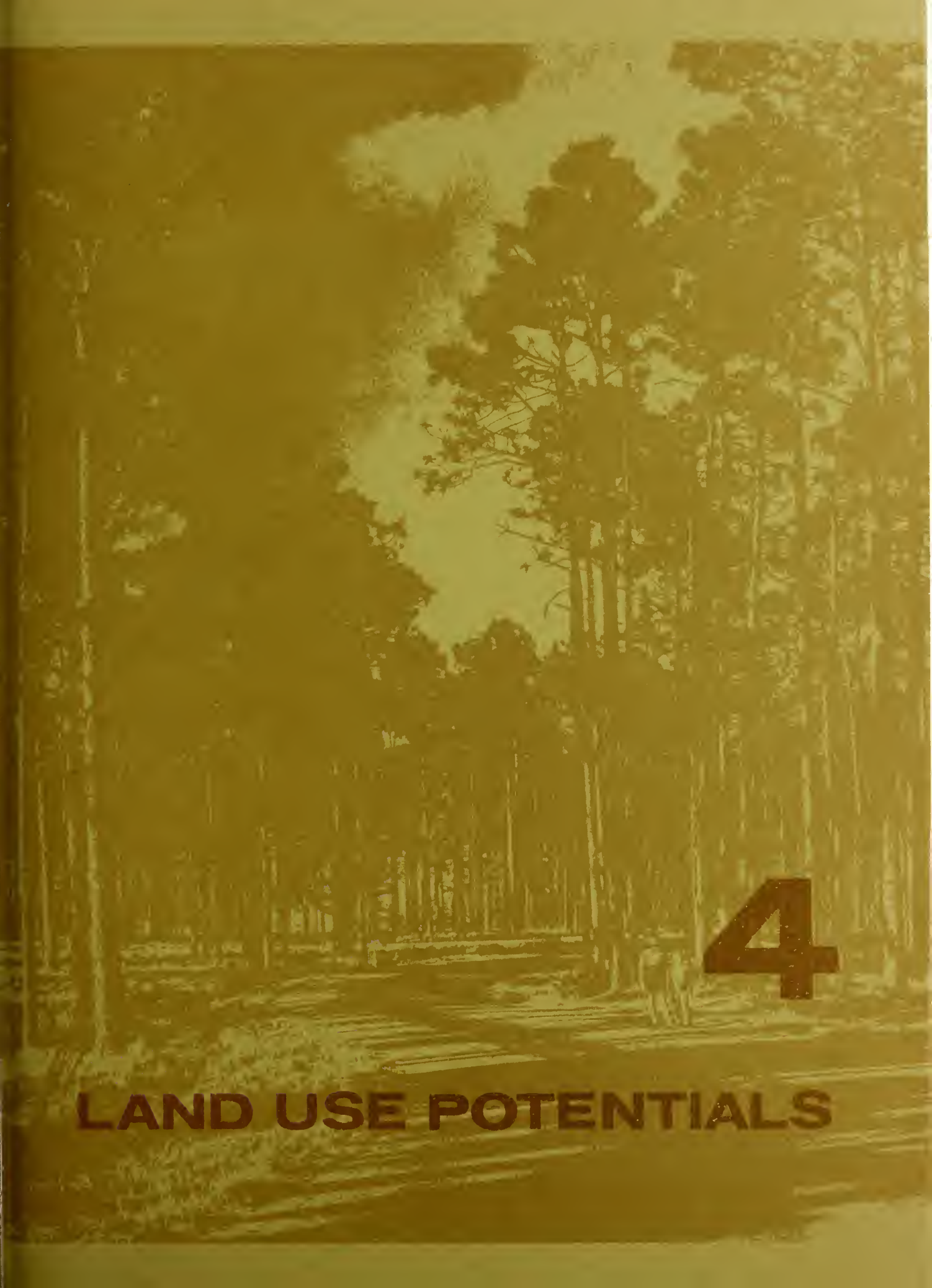
Rural fire coverage is provided by two rural fire districts, the Piney Forest and Allentown Fire Districts. Within the two districts all fires are attended to by the respective rural fire departments. Additional rural fire coverage is provided by Pembroke, Fairmont, Red Springs, Maxton, and Rowland, on a fee basis, but the level of service is not assured or county-wide. These municipal fire departments only serve a 3 to 5 mile area outside the city limits. Map 11 shows the rural fire districts in Robeson County.

ROBESON COUNTY
NORTH CAROLINA

MAP II

TRANSPORTATION & KEY COMMUNITY FACILITIES





4

LAND USE POTENTIALS

GENERAL LAND USE

The county's general land use pattern can be divided into two main categories, agricultural land and non-agricultural land. Information regarding 1967 agricultural land use was obtained from the annual State Farm Census. A comparison of 1967 data with 1958 data obtained from the 1958 North Carolina Soil and Water Conservation Needs Inventory is shown in Table IV.

During 1958, 585,171 acres or 96.7 percent of the county was classed as agricultural land; whereas in 1967, 497,236 acres or 82.3 percent of the county was classed as agricultural. Therefore, during the 1958-1967 period, agricultural land declined by 14.4 percent. This decline resulted from losses of wood and cropland. (Woodland decline by 12.9 percent and cropland by 5.3 percent).

During the same period, non-agricultural land use increased by 14.4 percent. The total increase occurred in the built-up land use category, which includes residential, commercial, and industrial uses. In the future, these uses are expected to increase. And because they compete for level, well-drained land, decreases will occur in cropland.

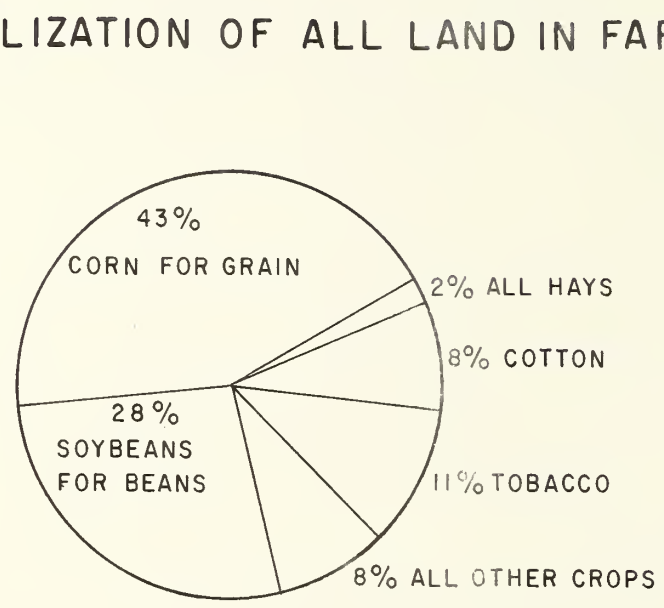
TABLE IV

AGRICULTURAL AND NON-AGRICULTURAL LAND USES
FOR 1958 AND 1967

Agricultural Land	1958		1967		% Change
Cropland	270,801	44.8%	238,949	39.5%	-5.3
Pasture	111,173	1.8%	16,942	2.8%	1.0
Woodland	292,000	48.3%	213,687	35.4%	-12.9
Other	11,197	1.8%	27,658	4.6%	2.8
TOTAL	585,171	96.7%	497,236	82.3%	-14.4
Non-Agricultural Land					
Federal Land	1,400	.2%	1,400	.2%	
Water	1,608	.3%	1,708	.3%	
Built-Up (Residential, Commercial, Etc.)	16,421	2.8%	103,856	17.2%	14.4
TOTAL	19,029	3.3%	106,964	17.7%	14.4
TOTALS	604,200	100%	604,200	100%	

Agriculture

The division of cropland in 1967 between different crops is shown by the pie chart below.



In terms of all farmland utilized for crops, the county's largest crops were corn and soybeans. However, these two crops provide a smaller cash return per acre than the two major cash crops, tobacco and cotton.

Tobacco is raised on 20,510 acres or 11 percent of the farmland, and its 1967 cash value of $24 million made it the leading cash crop. Next to tobacco, cotton had the highest cash value in 1967. The cotton crop was grown on 15,404 acres or 8 percent of the farmland.

Most of the county has good agricultural land. The only limitations are in areas with high water tables or where flooding occurs. Some of the land subject to these limitations in the proposed watershed project areas would have good agricultural

potentials after implementation of the projects.

Topography also influences agricultural uses. Steep, sloping land makes efficient row cropping difficult and mechanization less desirable. Robeson County's flat, gently rolling land is ideal for agricultural pursuits. The area's long frost-free season provides a long growing season. Rainfall is usually plentiful during the growing season and ample supplies of surface water are available for irrigation.

These factors make agriculture the primary element in Robeson County's economy. However, trends are developing that can affect the use of land for agriculture. Rising farm costs and increased mechanized farming operations discourage persons from entering farm occupations.

As seen in Table V the number of farms decreased by 1,313 units during the 1959-1964 period. Also, the average farm size increased by 11.8 acres per farm. Thus the total number of farm units are decreasing while the average farm size is increasing. This is in keeping with a nationwide trend.

TABLE V[1]

NUMBER OF FARMS FOR 1959 AND 1964

Year	No. of Farm Units	All Acres /Farm
1959	5,982	64.8
1964	4,669	76.6
	1,313	11.8

How does this trend affect land use? If the total number of farms decrease, more people will move into urban and suburban areas. A gradual population shift will occur from rural farm land to built-up areas, thus increasing development in and around built-up areas. This trend will continue in the foreseeable future.

[1] U. S. Department of Commerce, 1964 U. S. Census of Agriculture. (Washington: U. S. Government Printing Office), p. 281.

In summary, losses of agricultural land will occur in the future because of new residential, commercial, and industrial development. The greatest farmland losses will probably occur near Lumberton. In the Lumberton area, land currently in farms will gradually become urbanized due to anticipated population growth.

Other farmland areas will probably be lost to industrial or commercial development. Many farmland areas in rural portions of the county have desirable features which make them suitable for new industrial or commercial sites.

Map 12 shows the areas having the best potentials for agriculture. Excluding urban and developed land and areas subject to flooding or having high water tables, there are few areas unsuitable for general agriculture.

Forestry

In the 18th century, the early settlers were confronted by a vast forest. Since then nearly all productive, well-drained land in Robeson County has been cleared for development or farming. In 1962 the Division of Forest Economic Research of the U.S.D.A. reported that almost half of Robeson County or more than 318,000 acres consisted of forest land. Table VI below shows the ownership of this land.

TABLE VI

AREA OF FOREST LAND BY OWNERSHIP[2], ROBESON COUNTY
(000's Acres)

		% of Total
Farmer Owned	211.8	66.6
Forest Industry	9.8	3.1
Miscellaneous Private	95.6	30.2
TOTAL PRIVATE	317.2	
Public	.9	.1
TOTAL FOREST LAND	318.2	100.0

[2] U. S. Department of Agriculture, Forest Survey Statistics for the Southern Coastal Plain of North Carolina. (Raleigh: U. S. Department of Agriculture), 1962.

Nearly all of the forested land is privately owned. The forest industry owns a small percent of the total forest land, but they are managing many tracts of privately owned forests.

More than half of the forest in Robeson County is growing in swamps, bogs, or Carolina Bays. Therefore, due to wet soil conditions, these forest areas will probably remain undeveloped. Other forest areas on well-drained soils may go out of forest use. Flat, well-drained forest land around Lumberton has been used for subdivisions. Other forest areas are well suited for recreation, such as the Lumbee Recreation Center. Some land going out of cropland use may be converted into forest land.

Planting trees upon idle agricultural land or land not intensively planted with crops can economically benefit landowners. The Forest Service has determined that the returns from a tract of woodland averages from $15.00-$20.00 per acre per year. Furthermore, they estimate that the landowners investment in establishing woodlands is returned by the approximate value of the first timber harvest.

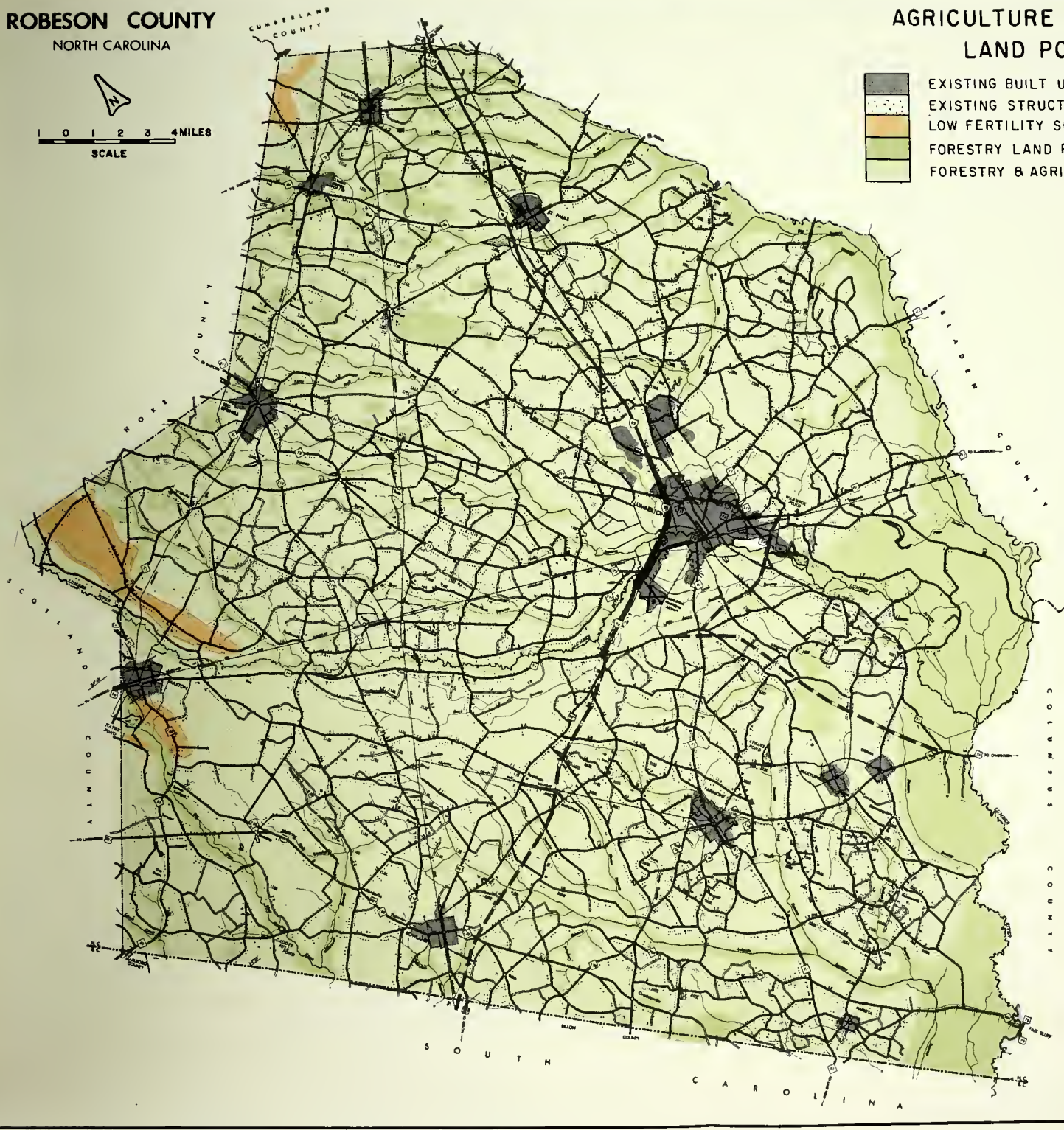
In addition to economic benefits, forests provide other benefits. Forests reduce soil erosion from both winds and floods and also slightly increase rainfall. Forests provide a wildlife habitat by providing adequate cover, shade, and food and contribute to the natural beauty of the landscape. Also, woodlands are often well suited for recreational uses. Woodland areas along the county's major rivers and streams have excellent potentials for multi-purpose recreation.

Map 12 shows the areas having the best potentials for forestry. Both agriculture and forestry have outstanding potentials in Robeson County. Land with agricultural potentials also has excellent potentials for forestry. However, certain wetland areas have only forestry potentials.

ROBESON COUNTY
NORTH CAROLINA

MAP 12

AGRICULTURE AND FORESTRY LAND POTENTIAL



COMMERCIAL AND INDUSTRIAL

Commercial

Commercial activity in Robeson County is centered in Lumberton. Lumberton has a large central business district (CBD) offering county and city governmental services, a number of professional offices such as doctors, lawyers, and architects, and a variety of retail and wholesale businesses.

In the last ten years, two shopping centers have been developed north of Lumberton's CBD along N. C. 211. Biggs Park and North Elm Shopping Centers offer a wide variety of retail goods, large automobile parking lots, and easy access from I-95 and other primary highways.

In addition to shopping centers, many highway oriented businesses[3] are located in Lumberton or just outside the city limits. Businesses outside the city limits have developed along N. C. 211, N. C. 41, U. S. 301, and at I-95 interchanges.

Map 13 shows the areas with the best commercial potentials. Commercial areas shown are areas having suitable natural conditions for development, access along primary highways or I-95 interchanges, and nearby population concentrations.

Highway-oriented businesses should continue to develop along the primary highways in the Lumberton area. Also, existing and proposed I-95 and U. S. 74 interchanges have potentials for additional commercial development.

The other incorporated towns in Robeson County also have central business districts. These central business districts provide basic needs and are substantially smaller than Lumberton's CBD. This is shown below by comparing Lumberton's retail and service land use area to the second and third largest towns in Robeson County.

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[3] Motels, restaurants, service stations, truck stops, auto and mobile home dealers, repair shops, appliance repair shops, quick service restaurants and groceries, building material shops.

Town	Retail and Service Area[4] (Acres)
Lumberton	180
Red Springs	25
Fairmont	26

Not only are the central business districts small, but each town's retail trade area is much smaller than Lumberton's retail trade area. Lumberton's is composed of approximately 90,000 people, whereas Red Springs and Fairmont have approximately 13,000 people residing in their retail trade area. Therefore, any future expansion of the small towns' central business districts will probably be minimal.

The rural portions of the county have some scattered commercial development, mainly combination service station-grocery stores. These businesses are serving a rural population that find it convenient to trade close to their place of residence. However, in view of the declining rural population and transportation improvements, the future of these businesses is dubious. Some establishments have gone out of business and for others it is just a matter of time. Probably only the businesses located near population centers, along primary roads, or near major crossroads will survive.

It is anticipated that Lumberton will remain the regional commercial area and exert the strongest attraction for commercial development because of its size, growth rate, large population concentration, year-round tourist traffic along I-95 and U. S. 301, good highway access from all directions, and well established businesses and industries.

Industrial

The Robeson County Industrial Development Commission has helped obtain new industries for Robeson County. (Since 1960, 28

[4] Information was extracted from each community's Land Development Plan prepared by the Division of Community Planning, Department of Conservation and Development, Raleigh, N. C.

plants have selected sites in Robeson County). Lumberton, with industrial plants specializing in produce canning, lumber production, tobacco processing, and apparels has attracted most of the industries. The availability of large, level tracts of land; city water and sewer facilities; fire and police protection; a large labor supply; cultural factilities; and excellent transportation facilities has enticed industries to locate in the Lumberton area. Lumberton's major industries[5] are listed in Table VII.

TABLE VII

LUMBERTON'S MAJOR EMPLOYERS

Alamance Knitting, Inc.	textiles
Cavalier Bag Company	cleaner bags
FCX Food Products	produce canning
Jonathan Corporation	apparel
Jones Knitting Corporation	apparel
Lumber Corporation	apparel
Lumber River Manufacturing	lumber processing
Onelia's Sportswear	apparel
Vel Cord-Southern Corporation	textiles
Whitehead & Anderson	tobacco processing

Two of the county's major industries are located just outside the Lumberton city limits. One, the B. F. Goodrich Company, is the largest single employer in the county. Their footwear manufacturing plant employs 1,400 persons. The other is the newest plant in Robeson County, Acme Electric Company. Acme assembles, tests, and ships transformers. Acme is located on a 20 acre tract of land adjacent to the I-95, U. S. 74 interchange.

Other major industries are located in the towns of Fairmont, Maxton, Red Springs, Rowland, and Saint Pauls. The industries are primarily textile and apparel related plants. Table VIII lists the industries by town for Robeson County.

[5] Industries employing 50 or more people.

TABLE VIII

OTHER MAJOR INDUSTRIES

Town	Industry	Type
Fairmont	Fairmont Knitting Mill	Apparel
	Fairmont Manufacturing Company	Apparel
	South Robeson Knitting Company	Apparel
Maxton	Hasty Veneer Company	Lumber
	Maxton Oil and Fertilizer	Fertilizer
	Stedman Manufacturing	Apparel
Pembroke	Tabor Products Company	Apparel
Red Springs	Celluknit Corporation	Knitting
	Deering-Milliken	Textiles
	Stedman Manufacturing	Apparel
Rowland	Rowland Manufacturing	Apparel
	Rowland Wood Products	Veneer
Saint Pauls	Burlington Industries	Textiles

Although there has been substantial industrial development in Robeson County since 1960, there is a lack of diversification. The county's industrial economy is still heavily oriented around textiles and tobacco. Both industries pay comparably low wages and specialization of these industries would result in a local economy that tends to fluctuate with the demand for textiles and with the tobacco season. Therefore, future efforts should be made to diversity industrial development.

Industrial development should continue in Robeson County because the county has many desirable features that are attractive to industrial development including the following:

1. Large tracts of flat, well-drained land at a reasonable price.
2. Large supplies of ground and surface water and county willingness to provide water and sewer where necessary.
3. A good road system throughout the county consisting of Interstate, United States, and North Carolina highways.
4. Adequate rail service.
5. Adequate electrical power and natural gas service.

6. Key facilities such as a technical institute, Pembroke State College, a regional hospital, and Lumberton Municipal Airport.

7. A large trainable labor supply.

Generally, land that is not subject to natural limitations and that is near primary transportation facilities, utilities, and water and sewer facilities has industrial potential. Some areas of Robeson County have key potentials for industrial use because they offer combinations of the features needed for industrial land. Map 13 shows areas with potential and key potential.

Key potential industrial areas exist along I-95 and U. S. 301. Land along this heavily traveled highway corridor near Lumberton, Saint Pauls, and Rowland has excellent industrial potential because of exposure, accessibility, and nearness to municipal water and sewer.

Land adjacent to the Lumberton Municipal Airport fronting I-95 also has key industrial potentials. Airport facilities are nearby, the land has high visibility from I-95, it is easily accessible by an I-95 interchange 0.4 mile to the north, and water and sewer will be provided to the area in the near future.

Another key potential industrial area near the airport fronts on State Road 2208 between I-95 and N. C. 41. S.R. 2208 will become part of the proposed U. S. 74 system in Robeson County and access will be possible from the U. S. 74, I-95 and the U. S. 74, N. C. 41 interchanges. Also, major electrical transmission lines are located nearby. The area is not served by water and sewer facilities.

Land near the B. F. Goodrich Company industrial site between N. C. 72 and the Seaboard Coast Line Railroad is not served by water and sewer facilities, but other features make it a key potential industrial area. The area is flat, well-drained and not developed to capacity; it has frontage on N. C. 27, a primary state highway; it is served by the Seaboard Coastline Railroad, major electrical transmission lines, a natural gas

pipeline; and it is about 4 miles west of an I-95 interchange and the Lumberton Municipal Airport.

Key potential industrial sites are located near Maxton. Maxton has water and sewer facilities that can be extended to the industrial sites. The sites have good access including branch railroad lines and two primary highways. Major electrical and natural gas transmission lines pass near the sites and two of the sites have access to the Lumber River.

In Red Springs a water line has been extended to an industrial site north of town on N. C. 211. This area has key industrial potential. Municipal water is supplied, access is provided by a branch railroad lines, and a primary highway. A natural gas transmission pipeline is located nearby.

An area west of Pembroke has key potential as an industrial area. Electrical and natural gas transmission lines are located nearby. Both railroad and primary highway access are available. The Lumber River provides a supply of surface water, and the site is near the county's largest educational institution, Pembroke State College.

Possible industrial sites are located along the main line of the Seaboard Coastline Railroad extending from Parkton, Pembroke, and Rowland. Industrial potential exists for industries that rely upon rail freight services. Well-drained areas near major electrical and gas transmission lines occur along the railroad.

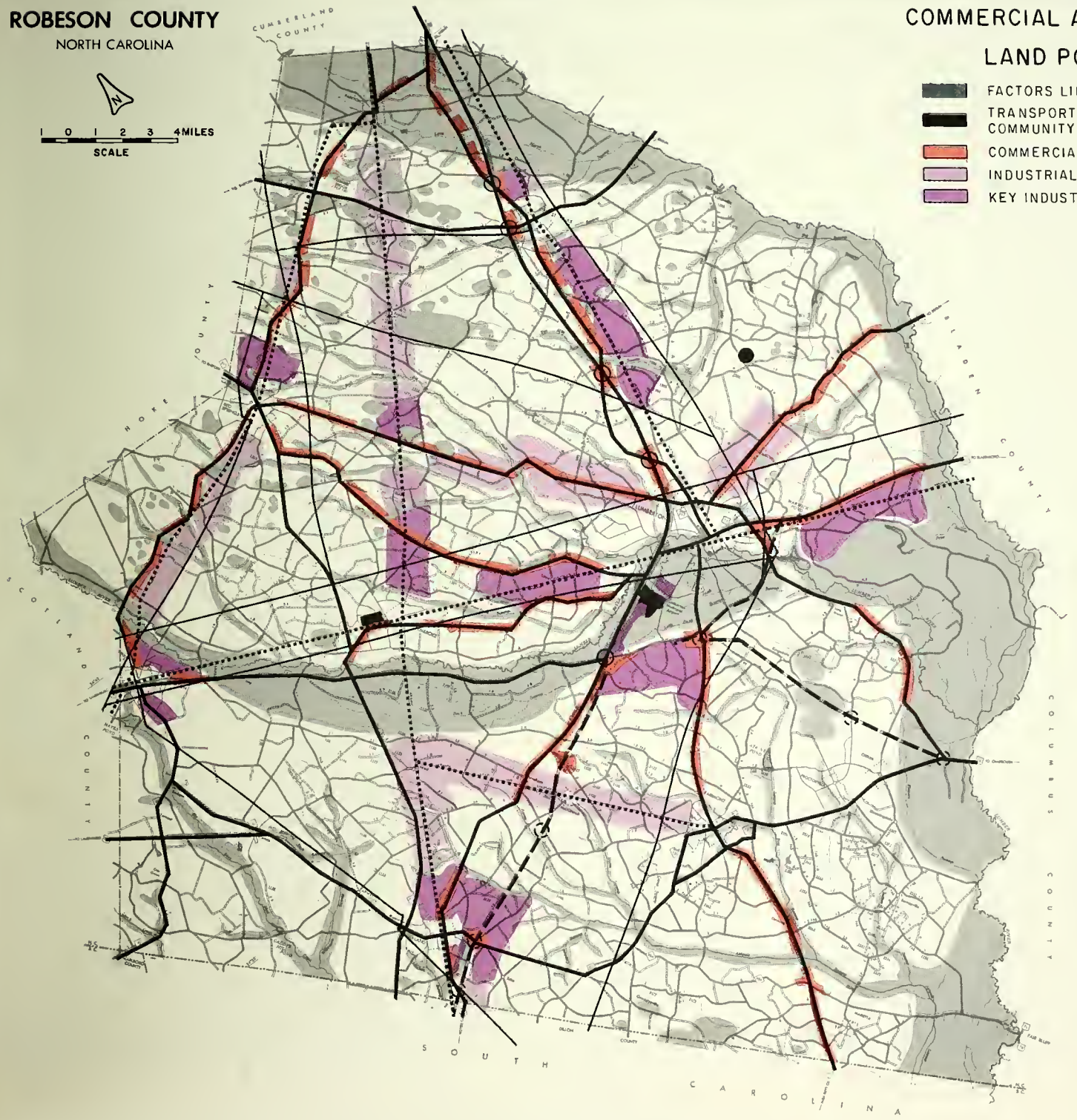
An area east of Lumberton fronting N. C. 211 has key potential for heavy industries. The site is ideally located adjacent to swamps where prevailing southwesterly and northwesterly winds would carry odors or smoke. Good access to the area is possible by both railroad and a primary highway, N. C. 211. A natural gas transmission line is located nearby.

MAP 13

ROBESON COUNTY

NORTH CAROLINA

COMMERCIAL AND INDUSTRIAL LAND POTENTIAL



RESIDENTIAL AND RECREATION

Residential

The 1960 Census of Population listed Robeson County's population at 89,102 people. The 1960 Census of Housing listed a total of 21,726 dwelling units in Robeson County. The total number of dwelling units are further broken down in Table IX.

TABLE IX

STANDARD AND SUBSTANDARD DWELLING UNITS

	Number	Percent
Standard	10,784	49.6
Substandard	10,942	50.4
Deteriorated	6,971	
Dilapidated	3,971	
TOTAL	21,726	100.0

A 1960 occupancy rate for Robeson County can be determined by dividing the total dwelling units into the total population. The occupancy rate of 4.1 persons per dwelling unit indicates that approximately 44,860 Robeson County residents lived in substandard dwelling units during 1960. Although these statistics are dated, they still indicate the depressed residential situation because impoverished economic conditions have prevented the renovation or replacement of most substandard units.

Since 1960, a total of 775 low rent public housing units have been planned by three local housing authorities. The Lumberton Housing Authority completed 125 of 675 public housing units. Fairmont and Maxton's public housing authorities each planned and completed 50 low rent public housing units.

County-wide efforts to provide standard housing units has lead to the formation of the Robeson County Housing Authority, the second county housing authority in North Carolina. The Robeson County Housing Authority, after fulfilling Housing and Urban Development requirements for establishing a workable

program, would be qualified to issue bonds for approved public housing projects. Fulfillment of the HUD requirements should become possible during 1970.

Although there are numerous substandard dwellings and a limited amount of public housing units, some of the more fortunate families have been able to move into standard dwellings. Therefore, housing conditions are improving in some areas. Scattered housing improvements occur in the Fairmont, Proctorville, Orrum area lying between these towns and the Ashpole Swamp. In the central part of the county, improved housing conditions occur near Pembroke and Lumberton. Also, scattered housing improvements occur near Saint Pauls and the area between it and the Cold Camp Creek.

The present development pattern, like other rural counties in North Carolina, is scattered. Many housing units are located along the roads and still others are located some distance from the roads. This scattered pattern makes it difficult to determine residential development trends in the county. However, there are areas where residential development appears to be occurring at a fast rate. The only area of substantial residential development is in and near Lumberton. In the northern section of the city and outside the north, northwest municipal boundaries, residential subdivisions have been developed. In addition, land developers have designed future subdivision plans for this area. Because of the recent growth and future subdivision plans, this is the county's new frontier for residential development. Another area of new residential development occurs near Pembroke, south of N. C. 74. Just east of the town a new subdivision has been developed.

Map 14 shows the areas with key potential for residential development. Because land used for residential purposes have some of the same requirements as good agricultural land, areas of residential potential coincide with the potential agriculture areas shown on Map 12. Although there are many potential residential areas in the county, key potential areas were approximated

in this study. The areas include Lumberton's new growth frontier, and the above mentioned area near Pembroke. Additional potential residential areas occur near existing populated areas where water and sewer facilities, police and fire protection, good access, schools, etc., are available. Areas near Red Springs, Fairmont, Maxton, Saint Pauls, and Rowland have such potential. It is unlikely that the towns of Lumber Bridge, Parkton, McDonald, Marietta, Proctorville, and Orrum will experience substantial residential growth.

In summary, it is correct to say that large areas of the county have potential for residential development based on criteria such as topography, soils, and access to major roads. However, past trends indicate that the rural population will decrease and increases will occur in or near the urban area. Of the urban areas, Lumberton should exert the greatest attraction for future residential development. Pembroke, Red Springs, Fairmont, Maxton, Saint Pauls, and Rowland should also experience new growth because the potential for residential development in these towns is greater than other rural areas.

Recreation

At the present time only one large recreational area has been developed. The Lumbee Recreation Center, located north of U. S. 74 at Red Banks, occupies 400 acres of land between the Lumber River and the Seaboard Coastline Railroad. The recreation center was completed in May, 1966, and is open to the public on a membership or fee basis. Facilities include a 100 acre lake for boating, fishing, and water skiing; a swimming pool; tennis courts; athletic fields; and an 18-hole golf course.

Three other golf courses have been developed in Robeson County and are open to the public on a membership or fee basis. These are the Lumberton Country Club, the Lumber Bridge Golf Course, and the Fairmont Golf Course. Private swimming clubs are located near Lumberton on N. C. 211 and in Fairmont. A private pond, Hayes Pond, one mile southwest of Maxton, is open for

fishing. Fishing is also possible in C.P.&L. Company's 250 acre lake and numerous private ponds. In addition to private and commercial facilities, the Towns of Lumberton, Red Springs, Fairmont, Saint Pauls, and Rowland have appointed recreation commissions to administer public recreation programs.

Lumberton has the only year round recreation program and indoor recreation center. In addition school playgrounds and parks are utilized for recreation activities. The other towns have summer recreation programs. The school playgrounds are utilized for their recreation activities. These facilities include baseball fields, football fields, and other related outdoor facilities. Red Springs has the only baseball park with grandstands. Ten thousand dollars has been invested in Robbins Park to meet specifications of a professional baseball farm team that will play home games in the park beginning in 1969.

The county does not owner or maintain any public recreational areas or facilities. The county should attempt to serve the recreation needs of its people by developing a County Recreation Commission; by developing a year-round recreation program; and by acquiring, developing, and maintaining parks and recreation areas.

Some excellent areas for recreation are available in the county. Portions of the land having limitations for urban development adjacent to the Lumber River could be developed as a county park providing boating, swimming, fishing and picnicking facilities. Near Red Springs, along Big Raft Swamp, water could be impounded to create a large lake for recreational purposes. Also, large tracts of wooded wetlands along the eastern portion of the county could be utilized for hunting. Recreational potentials for attracting tourists traveling along I-95 also exist in Robeson County. Land areas near I-95 interchanges having limited development potentials might become excellent sites for promoting the local history or natural beauty of Robeson County. A museum with the history of the Pembroke Indians and an artifacts display may attract many tourists. Other areas, particularly wetlands, may have potentials as cypress or flower gardens. Map 14 shows some of the areas within Robeson County having recreational potential.

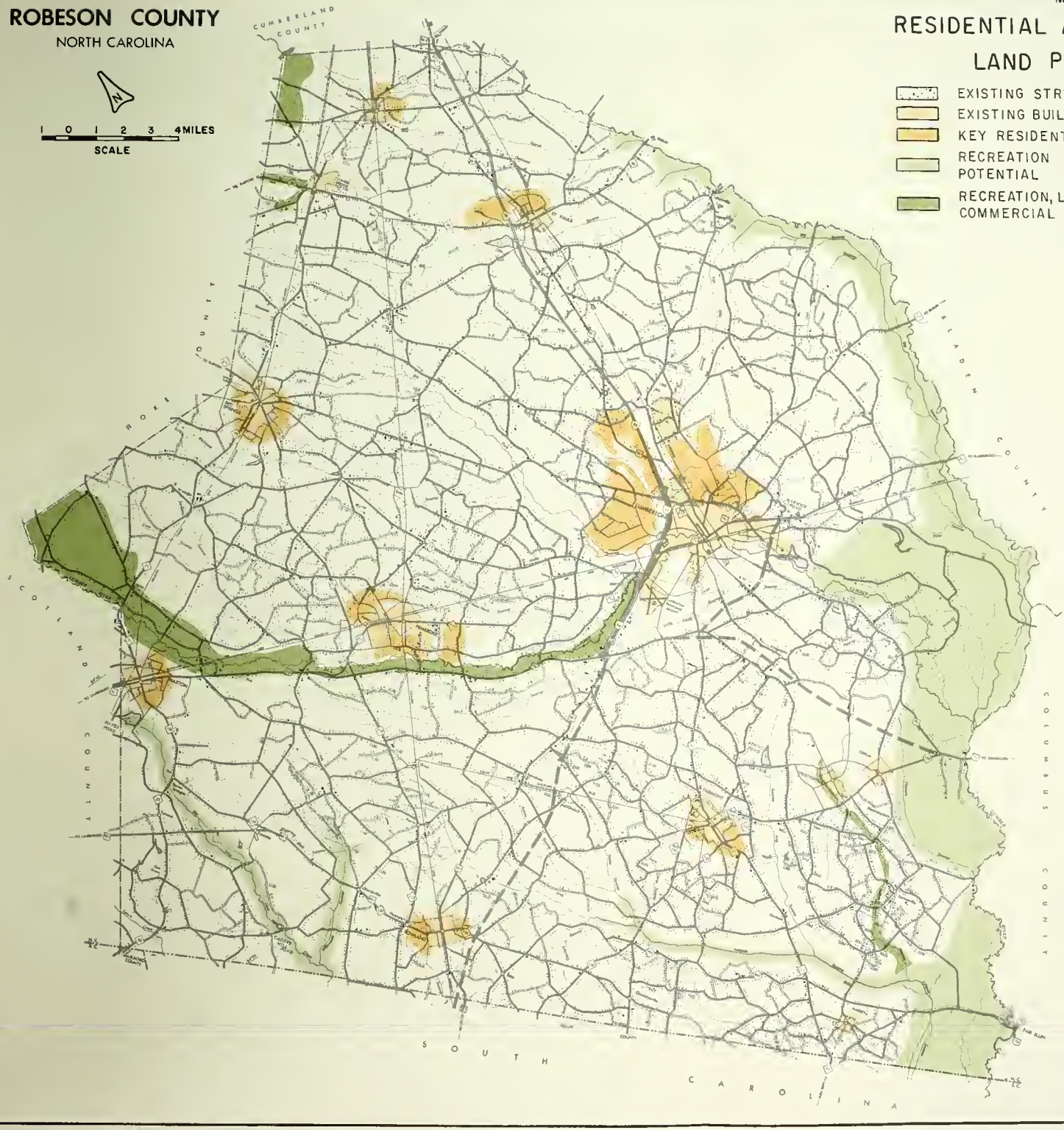
ROBESON COUNTY
NORTH CAROLINA

MAP 14

RESIDENTIAL AND RECREATION LAND POTENTIAL

- EXISTING STRUCTURES
- EXISTING BUILT UP AREAS
- KEY RESIDENTIAL LAND POTENTIAL
- RECREATION HUNTING AND FISHING POTENTIAL
- RECREATION, LAND POTENTIAL INCLUDING COMMERCIAL RECREATION

1 0 1 2 3 4 MILES
SCALE



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